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THE PERSISTENT PROBLEM OF THE PERSISTENT PESTICIDES: A LESSON IN ENVIRONMENTAL LAW

WILLIAM H. RODGERS, JR.*

On April 4, 1969 the United States Food & Drug Administration announced the seizure of 28,000 pounds of Lake Michigan coho salmon containing quantities of DDT in excess of established tolerance levels.¹ In response to the public outcry which followed, Robert H. Finch, Secretary of Health, Education and Welfare, acting in the tradition of the beleaguered public official, on April 21, announced the formation of a Secretary's Commission on Pesticides and Their Relationship to Environmental Health.² Dr. Emil Mrak, chancellor emeritus of the University of California at Davis, accepted the chairmanship of the body, which was charged generally with exploring the "field of environmental pollution and its consequent risks to our citizens."³ Among its members were governmental officials, representatives of the pesticides industry and university scientists.

A 44-page summary of the fourteen Mrak Commission recommendations was released by Secretary Finch at a press conference on November 12, 1969.⁴ On December 23, 1969 he released the complete report of the Commission and announced immediate steps to implement several of the recommendations.⁵ In sum, the Mrak Commission has urged corrective action that would (1) strengthen controls over the registration of chemical pesticides, (2) reorganize the Department of Health, Education and Welfare, (3) improve the administration of laws regulating the release of chemical pesticides into the environment and the food supply, and (4) encourage various initiatives to prevent further environmental contamination by pesticide residues.

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1. See Press Release, United States Food & Drug Administration April, 4, 1969.

2. Statement of Secretary Robert H. Finch, April 21, 1969.

3. *Id.* at 1.

4. U.S. DEPT. OF HEALTH, EDUCATION AND WELFARE, SECRETARY'S COMMISSION ON PESTICIDES AND THEIR RELATIONSHIP TO ENVIRONMENTAL HEALTH: RECOMMENDATION AND SUMMARIES pt. I (1969) [hereinafter cited as SUMMARY].

5. U.S. DEPT. OF HEALTH, EDUCATION AND WELFARE, SECRETARY'S COMMISSION ON PESTICIDES AND THEIR RELATIONSHIP TO ENVIRONMENTAL HEALTH, REPORT, pts. I & II (1969) [hereinafter cited as MRAK REPORT].

Unquestionably, the Mrak Commission report will be highly influential in determining the direction of federal pesticides policy in future years. This article will present an interpretation and criticism of the Commission's conclusions, with a special emphasis on the treatment and relevance of the DDT issue. Each of the fourteen recommendations will be reviewed where relevant to the four major goals set forth above. The crucial and often decisive role of the law as a lever for reform, as a catalyst for transmitting scientific information to the political decision-maker and as a medium for planning to protect against the effects of pesticides pollution on the environment and the population will be emphasized. Obstacles to reform, including the rigidity of governmental agencies and the shortsightedness of industry, will be identified and evaluated.

Some of the Mrak Commission recommendations reflect sound policy judgments, while others give cause for concern. Although evaluation of these recommendations is important, it should also be remembered that the Commission's repeated acknowledgement that "corrective action"⁶ is necessary constitutes no assurance that its proposals will be implemented. The recommendations are sufficiently abstract to make implementation dependent upon a renewed commitment by officials who have been less than energetic in fulfilling their responsibilities. In addition, much of the constructive content of the report is only a reiteration of proposals that have been advanced—to no avail—by other distinguished bodies in recent years.⁷ That still another study was deemed necessary demonstrates the continued rigidity of the forces opposing effective regulation of chemical pesticides.

The story of the persistent pesticides⁸ is an increasingly familiar one of technology run amok. We have had similar experiences with strontium 90, carbon monoxide, sulfur dioxide, chemical detergents and countless other products of an industrial society.⁹ We will doubtless confront similar challenges in the future in the form of new contributions to air, water and noise pollution. At stake ultimately is whether civilized man is capable of controlling, through law, his modern technology which, while bestowing great gains on the one hand, degrades his environment and threatens his biology on the other. The lesson of the persistent pesticides on this score is instructive, urgent and grotesque.

Additional legal action before the legislatures, agencies and courts is both timely and essential to secure a measure of protection for man and his environment. Like other disciplines, the legal profession has been lax in attempting to

6. MRAK REPORT 5.

7. See notes 89-96 *infra* and accompanying text.

8. Though many pesticides have qualities of persistence, the chlorinated hydrocarbons have acquired the greatest notoriety. Among these, the most widely used are DDT, dieldrin, endrin, aldrin, chlordane, toxaphene, lindane and heptachlor.

9. See B. COMMONER, *SCIENCE AND SURVIVAL* (1966).

halt the accelerating degradation of our physical environment. Unlike most disciplines, however, the legal profession is uniquely situated and thoroughly trained to do something about the problem. Experience has demonstrated that novel legal initiatives, notably the Wisconsin DDT hearings,¹⁰ have been instrumental in the current assault against the persistent pesticides.

I. STRENGTHENING CONTROLS OVER THE REGISTRATION OF CHEMICAL PESTICIDES

Recommendation I. Initiate closer cooperation among the Departments of Health, Education and Welfare, Agriculture and Interior on pesticide problems through establishment of a new interagency agreement.

A. The Statutory Framework

The registration of chemical pesticides is now in the exclusive domain of the Secretary of Agriculture under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).¹¹ The particulars of the legislation deserve mention, though they bear scant relationship to the realities of regulation in the pesticides world. Any product termed an "economic poison," otherwise defined as a chemical pesticide, must be registered before it may be marketed in interstate commerce.¹² The act forbids the sale of adulterated, misbranded or improperly labelled pesticides.¹³ Misbranding results if the labeling, among other deficiencies, fails to supply prominently placed directions which are adequate for the protection of the public; or if the product when used as directed or in accordance with commonly recognized practice causes injury to man or other non-target species.¹⁴ Provisions for the cancellation of a registration, upon thirty days notice, are included.¹⁵ Violations may be punished criminally.¹⁶ In addition, the United States Department of Agriculture (USDA) is authorized to institute court proceedings for the seizure and disposition of products which are adulterated, misbranded or unregistered.¹⁷ Also relevant to the statutory scheme are the pesticide chemical provisions of the Food, Drug & Cosmetic Act, which require the Secretary of Health, Education and Welfare (HEW) to establish tolerances in the event a registered use of an economic poison will result in residues in food products.¹⁸

Manifestly, the Secretaries of HEW and Interior (USDI) are given no statutory responsibility for determining what chemical pesticides will be reg-

10. See Wurster, *The Wisconsin DDT Hearings*, 19 BIO-SCIENCE 809 (1969).

11. 7 U.S.C. §§ 135-135k (1964).

12. 7 U.S.C. § 135b (1964).

13. 7 U.S.C. § 135a(5) (1964).

14. 7 U.S.C. § 135(z) (1964).

15. 7 U.S.C. § 135b (1964).

16. 7 U.S.C. § 135f (1964).

17. 7 U.S.C. § 135g (1964).

18. 21 U.S.C. § 346a (1964).

istered for what uses. Their participation in the registration process is advisory only, pursuant to an Interagency Agreement entered into with the Secretary of Agriculture in 1964 and rewritten in March of this year.¹⁹ Protestations by HEW or USDI that a chemical pesticide may present a hazard to human health or contaminate the environment cannot bar the registration of the chemical by the Secretary of Agriculture. In practice, during the last five years hundreds of pesticide products have been registered for use over the objections of HEW.²⁰ Acknowledging the problem, the Mrak Commission recommends that "approval by the Secretaries of HEW and Interior as well as Agriculture . . . be required for all pesticide registrations."²¹

B. Comment

Wresting exclusive control over the process of registering chemical pesticides from the USDA should be a *sine qua non* for those interested in enforcing the Mrak Commission recommendations. No other single proposal has greater long range implications. Degradation of the environment by irresponsible and myopic bureaucracies is a phenomenon that has become distressingly familiar.²² It has inspired proposals for legislative reform.²³ But the experience with the chlorinated hydrocarbon pesticides is without parallel in illustrating dramatically the disastrous course that may be followed by the single-track agency, here the USDA, operating on functional lines and responsive to special interests, heedless of the impact of its policies on the population at large and the total environment.

Decisions regarding the registration of chemical pesticides obviously affect the nation's fundamental needs to produce food, preserve its natural resources and protect the health of its population. To be sure, farm groups, food producers and the manufacturers of agricultural chemicals, strongly represented in USDA and its state counterparts, have an intense interest in securing speedy registrations authorizing the use of cheap, effective chemical pesticides. The agricultural chemicals industry, which was insignificant at the close of World War II, now has domestic sales well in excess of a billion dollars annually and, consequently, represents concerns fundamental to our agricultural economy.²⁴

19. The 1964 Agreement is reproduced in COMM. ON GOV'T OPERATIONS, INTERAGENCY ENVIRONMENTAL HAZARDS COORDINATION: PESTICIDES AND PUBLIC POLICY, S. REP. NO. 1379, 89th Cong., 2d Sess. 39-41 (1966) [hereinafter cited as RIBICOFF REPORT]. The new Agreement appears in 35 Fed. Reg. 4014 (March 3, 1970).

20. See HOUSE COMM. ON GOV'T OPERATIONS, DEFICIENCIES IN ADMINISTRATION OF THE FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT, H.R. REP. NO. 637, 91st Cong., 1st Sess. 14 (1969) [hereinafter cited as DEFICIENCIES REPORT].

21. MRAK REPORT 7.

22. See text accompanying notes 200-207 *infra*.

23. See Mich. H.B. 3055 (1969) (drafted by Professor Joseph L. Sax).

24. Compare G. C. BLOOM & S. E. DEGLER, PESTICIDES AND POLLUTION 2 (1969) with DEFICIENCIES REPORT at 21 and MRAK REPORT at 46, 227. See Rohrman, *The Law of Pesticides: Present and Future*, 17 J. PUB. L. 351, 355 n.11 (1968), for a discussion of the evolution of pesticides manufacturing.

No less obvious, however, is the interest in pesticides of environmental groups and the USDI, which through the Fish and Wildlife Service is responsible for protecting wildlife and their habitats from the debilitating effects of chemical compounds. And the indisputable health hazards posed by the widespread use of pesticides unequivocally establish the interest of the medical community and HEW, acting through the Food & Drug Administration and the Public Health Service, in deciding what formulations will be registered for what uses.

Our experience with chemical pesticides has afforded the American people lasting insights into the complex interrelationships between the various components of the world's ecosystems and the need to coordinate governmental responses to control activity that disregards established jurisdictional lines. The sobering aspect of the experience lies not so much in the fact that the risk was confronted, but rather that it was confronted before it was fully understood. Opening the registration process to non-agricultural points of view and insights is essential to the development of sound predictive judgments that will minimize similar environmental catastrophes.²⁵

The Mrak Commission's view that a new Interagency Agreement would be sufficient to strengthen cooperative action among the Departments²⁶ ignores inevitable deficiencies in the administration of interagency agreements and overlooks legal and political realities. To accomplish reform in the registration process and the other statutory obligations, FIFRA should be amended specifically to assure participation by HEW and USDI. Legal responsibilities should be articulated clearly in this legislation, giving each department the power to veto proposed registrations, supervise labeling obligations and initiate cancellation proceedings. It is time to rewrite the basic pesticides legislation which, in significant respects, has remained unchanged since the Insecticide Act of 1910,²⁷ a statute that was hardly a monument to environmental concern.

Present administrative realities further accentuate the urgency of legislative reform. That USDA, acting through the Pesticides Regulation Division (PRD), has been scandalously derelict in enforcing FIFRA is manifest. The details and extent of this betrayal of the public interest have been documented thoroughly by a Subcommittee of the House Committee on Government Operations.²⁸ Pesticide products have been approved for use without compliance with established interdepartmental procedures for resolving safety questions. Products have been approved for uses that were practically certain to result in the

25. On the need for making before-the-fact judgments about the possible adverse effects of new technology, see Baldwin, *The Santa Barbara Oil Spill*, CONFERENCE ON LAW AND THE ENVIRONMENT, Sept. 1969 (unpublished paper on file at The Conservation Foundation, Washington, D.C.).

26. See MRAC REPORT 8.

27. 36 Stat. 331 (1910).

28. See *Deficiencies In Administration of Federal Insecticide, Fungicide and Rodenticide Act*, Hearings Before a Subcomm. of the House Comm. on Gov't Operations, 91st Cong., 1st Sess. (1969) [hereinafter cited as *Deficiencies Hearings*].

illegal adulteration of food. Labels approved for registration have failed to inform users of possible hazards and provide accurate directions. Actions to cancel registered products have been long delayed and slipshod; indeed, according to the house committee, PRD never has secured the cancellation of a registration in a contested case. After completion of uncontested cancellation proceedings, hazardous products have remained in marketing channels for years. Despite numerous and repeated violations, not a single case has been referred to the Department of Justice for criminal prosecution. And PRD officials have appointed consultants to positions in which their duties presented a clear conflict of interest with their private employer in the pesticides industry. In one celebrated instance Dr. Roy T. Hansberry, an official of one of Shell Chemical Company's affiliates, was appointed to a task force examining criteria applied by PRD to determine whether pesticide registration applications should be approved.²⁹ In short, enforcement of the central legislation for regulating chemical pesticides has been undermined by administrative ineptitude, indifference and corruption; the public interest has been grossly ignored to the distinct advantage of the chemical pesticides industry.

Under the circumstances, it is encouraging that Secretary Finch has affirmed publicly that HEW must have "clearly defined" authority to intervene against registered uses of pesticides deemed to be hazardous to the health of man or other living organisms upon which life depends.³⁰ It is discouraging, however, that this clear definition of authority apparently is to be found not in new legislation but in a renovated version of the Interagency Agreement, which, as recently revised, prescribes elaborate procedures for consultation and review of pesticide registrations by representatives of HEW, USDI and USDA.³¹

Rehabilitating FIFRA by simply rewriting the Agreement is impossible. First, no interdepartmental agreement can override the specific provisions of the legislation which vests sole responsibility for registration in the Secretary of Agriculture, who has not done the job. Second, experience demonstrates that compliance under any interagency agreement is likely to be haphazard and incomplete. The former agreement specifically required that in the event of a difference of opinion among departmental representatives the matter would be referred directly to the secretary responsible for final action.

29. Understandably, this particular Task Force recommended that the primary responsibility for registering pesticide chemicals should remain with USDA, the other federal agencies serving only in an advisory capacity. REPORT OF THE TASK FORCE ON THE PESTICIDES REGULATION DIVISION 34 (November, 1965), reproduced as App. 6 in *Deficiencies Hearings* 248-96. This task force also chastized the Public Health Service for failing to support objections on health grounds with appropriate scientific evidence, *id.* at 33, an obligation imposed by the Interagency Agreement, but one clearly contravening statutory requirements that the applicant sustain the burden of presenting adequate evidence of safety. See DEFICIENCIES REPORT 39.

30. Statement of Secretary Finch of December 23, 1969.

31. 35 Fed. Reg. 4014 (March 3, 1970).

Not a single one of the more than 1600 objections made by HEW was referred to the Secretary of Agriculture.³² The annual general conference of departmental representatives, prescribed by paragraph 3 of the old agreement and paragraph 10 of the new, has never been held.³³ Other instances of lack of cooperation, immaturity and irresponsibility abound.³⁴ It is unjustifiably sanguine to assume that those responsible for nullifying the old agreement will administer the revised version to accomplish significant reform in the regulation of chemical pesticides.

In short, the Interagency Agreement, in conception and operation, invites the administrator to evade his responsibility, amidst uncertain guidelines, to the detriment of the public. Continuation of the loose informality of this arrangement leaves too much room for "business as usual" administration by officials whose combined efforts to regulate the use of chemical pesticides to date have been deplorable. Bringing the delinquents to book and reinstating a sensible pattern of administration can be accomplished with certainty only by rewriting FIFRA to give HEW and USDI significant enforcement responsibilities. Clear guidelines, helpful to administrators, are equally beneficial to the outsider who may be inclined to intervene to enforce legislative or administrative standards.³⁵

Legislative reform of the registration process should be implemented promptly. The process of educating the public, inaugurated in 1962 by Rachel Carson,³⁶ is now largely realized. The DDT issue is a *cause célèbre*, widely covered in the press.³⁷ Public opinion is inflamed—and deservedly so—about the mounting evidence of environmental contamination and the growing suspicion that DDT threatens human health. The climate for wholesale reform of the registration process will never be better. Opportunism is a part of good politics. It is the key to legal reform. The elimination of DDT and its close relatives, without more, will not assure effective long run supervision of the sale and use of all chemical pesticides, now numbering some 900 compounds in 45,000 separate products.³⁸ The dangers will be further multiplied as the production and use of pesticides in the United States continues to grow in response to local and foreign demands.³⁹ The opportunity to protect the Ameri-

32. See DEFICIENCIES REPORT 36.

33. *Id.* at 37.

34. See REPORT OF THE TASK FORCE ON THE PESTICIDES REGULATION DIVISION, *supra* note 29, at 30-34.

35. See text accompanying notes 218-25 *infra*, discussing the leverage afforded by the Delaney amendment.

36. THE SILENT SPRING (1962).

37. *E.g.*, Wall St. J., Nov. 28, 1969, at 4, col. 2 ("Evidence of the present system's inadequacy surfaced three weeks ago when the Agriculture Department disclosed that for almost a month it had been investigating heptachlor epoxide contamination of turkeys, most of them originally destined for the nation's Thanksgiving tables").

38. See DEFICIENCIES REPORT 21.

39. Surveys and reports of government and industrial economists indicate that synthetic organic pesticide production is increasing at approximately an annual rate of 15 per cent with an indication of more than \$3 billion sales by 1975. This

can public against a repetition of the DDT experience, which is now present, must be exploited.

Recommendation III. Eliminate within two years all uses of DDT and DDD in the United States, excepting those uses essential to the preservation of human health or welfare and approved unanimously by the Secretaries of the Departments of Health, Education, and Welfare, Agriculture, and Interior.

Recommendation IV. Restrict the Usage of certain persistent pesticides in the United States to specific essential uses which create no known hazard to human health or the quality of the environment and which are unanimously approved by the Secretaries of the Departments of Health, Education and Welfare, Agriculture, and Interior.

A. *Patterns of Use*

These recommendations to restrict the use of certain persistent pesticides should be assessed in the context of a brief discussion of the evolution of the DDT crisis. DDT was not used widely as a chemical pesticide until World War II.⁴⁰ Its reputation was established quickly as a miracle insecticide, effective in controlling the carriers of many dreaded tropical diseases, including malaria, typhus and yellow fever. In 1948 the Swiss chemist who discovered its broad insecticidal properties was awarded the Nobel prize.⁴¹ After the war, domestic use of DDT in the United States rose steadily as the chemical proved its utility for public health purposes and in controlling agricultural, home garden and forest pests. Its cheapness, low toxicity to the applicator, broad spectrum effect, and persistence combined to produce what was thought to be an ideal general purpose insecticide. Optimists predicted that all major insect pests would be eradicated by this extraordinary chemical.⁴² Production, domestic use and exports of DDT increased throughout the 1950's and early 1960's, reaching a peak of 188 million pounds in the 1962-63 season.⁴³ During recent years, however, the use of DDT has decreased, a pattern duplicated, with some variations, by its close relatives, dieldrin, aldrin, and heptachlor.⁴⁴ It is esti-

is in contrast to increases of approximately 37 percent for the 5-year period, 1963 to 1967. The total dollar value of all pesticides produced in this country was \$440 million in 1964; this has increased to \$12 billion in 1969 . . . Predictions are that insecticides will more than double in use by 1975 to more than \$600 million, while herbicide uses will increase to more than double that of insecticides (\$1-1½ billion) during that same period.

MR&K REPORT 46-47.

40. Sources on usage include R. RUDD, PESTICIDES AND THE LIVING LANDSCAPE (1964); COMM. ON PERSISTENT PESTICIDES, DIVISION OF BIOLOGY AND AGRIC., NAT'L RESEARCH COUNCIL, REPORT TO THE U.S. DEP'T OF AGRIC. (1969) [hereinafter cited as the JENSEN COMMITTEE REPORT]; U.S. DEP'T OF AGRIC., ECONOMIC RESEARCH SERVICE, AGRICULTURAL ECONOMIC REPORT No. 158: DDT USED IN FARM PRODUCTION (1969) [hereinafter cited as REPORT ON DDT USE]; MR&K REPORT 46-97.

41. See NEWSPAPER ENTERPRISE ASSOCIATION, INC., THE WORLD ALMANAC 453 (1970).

42. MR&K REPORT 46.

43. REPORT ON DDT USE 2.

44. JENSEN COMMITTEE REPORT 6.

ated that DDT presently represents approximately 15% of the total agricultural poisons used in the United States.⁴⁵ Exports claim around 70% of the United States total production and are used primarily for malaria control in underdeveloped nations.⁴⁶ Worldwide production totals are unknown,⁴⁷ but use is increasing rapidly as the agriculture in developing countries adopts new chemical control techniques.⁴⁸ Domestically, farmers are the major users, accounting for perhaps two-thirds of the consumption.⁴⁹ Present high use field crops include tobacco, cotton, peanuts, corn, wheat and hay.⁵⁰ Other crops significantly affected by recent use restrictions include apples, potatoes, onions, apricots, peas, strawberries, cherries and raspberries.⁵¹

The reasons for the dwindling domestic use of DDT are several.⁵² The development of resistant strains of insects, now numbering some 89 species,⁵³ has eroded its effectiveness. Cheaper, more dependable alternatives are now commercially available. Primitive notions of controlling insect populations through massive spray programs have been displaced by thinking which emphasizes the need for integrated control measures, combining chemical applications with biological and other control techniques, including the introduction of insect diseases, predators, and sex sterilization.⁵⁴ Perhaps most important has been the gradually increasing awareness by the general public and governmental officials that DDT and related persistent pesticides have been one of the world's most serious pollution problems. What staggers the imagination about DDT is that decisive action to restrict its use was so long delayed.

B. *The Scientific Evidence: The Gathering Storm*

Given the scientific complexities of the DDT issue, adducing the evidence in any forum truly requires an interdisciplinary venture. The case against the persistent pesticides has been recorded in the professional journals in the form of contributions from the fields of botany, pharmacology, ecology, entomology, chemistry, marine biology, pathology, economics and political

45. See MacDougall, *Summation of the Session on General Aspects of Pesticide Use*, 160 ANNALS OF THE NEW YORK ACAD. OF SCIENCES 69 (1969).

46. REPORT ON DDT USE 2.

47. JENSEN COMMITTEE REPORT 7.

48. MRAK REPORT 55-56.

49. REPORT ON DDT USE 2.

50. *Id.* at 3.

51. These crops were mentioned at the Washington DDT hearings, held before the State Director of Agriculture in Seattle on October 14-16, by witnesses opposing the proposed ban, including representatives of Del Monte Corp., Washington Growers Clearing House, Inland Empire Pea Growers Ass'n Washington Ass'n of Dry Pea & Lentil Producers, Hop Growers of Washington, Washington State Seed Ass'n, Washington Potatoe Comm'n, Federal Stone Fruit Marketing Committee and the North Central Washington Fieldman's Ass'n.

52. See JENSEN COMMITTEE REPORT 7.

53. See MRAK REPORT 59.

54. See NATIONAL ACADEMY OF SCIENCES, INSECT PEST MANAGEMENT AND CONTROL, *passim* (1969).

science, to name but prime examples.⁵⁵ The Mrak Commission reviewed over 5000 references.⁵⁶ What follows is a summary of the accepted scientific publications, interpreted, of course, from a legal point of view.

Unique biological and chemical properties combine to create DDT's extraordinary pollution potential.⁵⁷ It is a persistent chemical, having a half-life in some environments of up to 15 years. It has extraordinary mobility and may be transported by air and water from the original place of application throughout the world's ecosystems.⁵⁸ Within a single day, pesticides applied on the southern plains of Texas have been carried by dust particles to Cincinnati, Ohio.⁵⁹ Because it is a fat soluble, DDT is concentrated in living systems and passed along through food chains. Consequently, a bird at the top of the food pyramid may accumulate quantities of the chemical thousands of times in excess of the traces found in the lower organisms upon which it feeds.⁶⁰ The Lake Michigan coho, at the top of the food chain, were victimized by this process of biological magnification. It is this lethal combination of qualities—persistence, mobility, solubility in fat and toxicity—which distinguishes DDT as a pollutant almost without parallel.

The scientific documentation, which has been accumulating for many years, supplies the dimensions of our present predicament. It has been estimated that one billion pounds of DDT are circulating through the world's water and air supply.⁶¹ Traces of the chemical have been found in penguins in the Antarctic,⁶² Eskimos in the arctic,⁶³ and in tuna in the mid-Pacific.⁶⁴ In 1963 the President's Science Advisory Committee reported that 20 tons of DDT residue were stored in the bodies of the people of the United States, an average of approximately one tenth of a gram per person.⁶⁵ Residues have been detected in the body tissues of people throughout the world⁶⁶

55. The Mrak Report contains a complete bibliography following each subcommittee report.

56. See MRAK REPORT 5.

57. E.g., Wurster, *Chlorinated Hydrocarbon Insecticides and the World Ecosystem*, 2 BIOLOGICAL CONSERVATION 123 (1969); Wurster, *The Wisconsin DDT Hearings*, 19 BIO-SCIENCE 809 (1969).

58. E.g., Antomaria et al., *Airborne Particulates in Pittsburgh: Association with p, p'-DDT*, 150 SCIENCE 1476 (1965); Risebrough, *Polychlorinated Biphenyls in Global Ecosystems*, 220 NATURE 1098 (1968).

59. Cohen & Pinkerton, *Widespread Translocation of Pesticides by Air Transport and Rain-Out*, in AMERICAN CHEMICAL SOCIETY, *ORGANIC PESTICIDES IN THE ENVIRONMENT* 163 (1966).

60. E.g., Woodwell et al., *DDT Residues in an East Coast Estuary: A Case of Biological Concentration of a Persistent Insecticide*, 156 SCIENCE 821 (1967); MRAK REPORT 186-89.

61. Woodwell, *Radioactivity and Fallout: The Model Pollution*, N.Y. BOTANICAL GARDEN J. (1968). See Niering, *The Effects of Pesticides*, 18 BIO-SCIENCE 869 n.1 (1968).

62. Tatton & Ruzicka, *Organochlorine Pesticides in Antarctica*, 215 NATURE 346 (1967).

63. Durham et al., *Insecticide Content of Diet and Body Fat of Alaskan Natives*, 134 SCIENCE 1880 (1961).

64. See R. Risebrough, *Chlorinated Hydrocarbons in Marine Ecosystems*, (ms. on file with author).

65. See 1963 PRESIDENT'S SCIENCE ADVISORY COMM. REP., *USE OF PESTICIDES* 6 [hereinafter cited as *USE OF PESTICIDES*].

66. See MRAK REPORT 319-24.

The toxicity of this widely disseminated pesticide upon non-target organisms also has been thoroughly documented. The rare Bermuda petrel, which does not venture within hundreds of miles of a major land mass, has suffered significant reproductive setbacks.⁶⁷ In recent years, peregrine falcons⁶⁸ and brown pelicans,⁶⁹ among others, have suffered ominous reductions in nesting successes. Our national symbol, the bald eagle, is threatened with extinction.⁷⁰ Numerous other species of birds, notably the carnivores, are affected similarly.⁷¹

DDT is widely distributed in marine environment. Quantities in the oceans will continue to intensify for many years.⁷² A recent report by the United States Bureau of Sport Fisheries and Wildlife disclosed that residues were found in 584 of 590 samples of fish taken from 45 rivers and lakes in the United States.⁷³ Marine biologists consider the chlorinated hydrocarbon pesticides to be the most serious form of water pollution.⁷⁴ For several years and with increasing vehemency public agencies responsible for preserving fish life and their habitats have spoken out against further use of the persistent chemicals.⁷⁵ Fish kills due to isolated pesticide episodes, though significant,⁷⁶ do not disclose the gravity of the possible long-range consequences. Minute, sub-lethal doses of DDT can produce significant reproductive setbacks in certain species.⁷⁷ One reputable study has concluded that DDT also slows down photosynthesis in marine plant life,⁷⁸ thus interfering with the fundamental chemical process by which green plants absorb the sun's energy and make it available to all living things.

Whether the persistent pesticides pose a threat to human health is still an open question. It is indisputable, however, that the quantities stored in human beings would not be tolerated in the food supply.⁷⁹ Incredibly, nursing mothers,

67. Wurster & Wingate, *DDT Residues and Declining Reproduction in the Bermuda Petrel*, 159 SCIENCE 979 (1968).

68. See J. HICKEY, PEREGRINE FALCON POPULATIONS: THEIR BIOLOGY AND DECLINE (1969).

69. Open Letter to Governor Ronald Reagan and the People of the State of California, signed by 62 marine scientists, 115 Cong. Rec. S9182, S9183 (daily ed. Aug. 5, 1969); see MRAK REPORT 211.

70. Postupolsky, *Eagles and Pesticides* (Department of Wildlife Ecology, University of Wisconsin, April 22, 1969) (unpublished document); 115 CONG. REC. S6306 (daily ed. June 12, 1969).

71. The mechanism by which the persistent pesticides cause reproductive failures is now known: "DDE, a metabolite of DDT, induces the formation of enzymes which break down steroid hormones. The latter, among other things, control calcium metabolism in birds. The resulting calcium imbalance has led to production of eggs with thin or flaking shells." Postupolsky, *supra* note 70; see J. HICKEY, *supra* note 68, *passim*.

72. MRAK REPORT 239.

73. See 115 Cong. Rec. 6142 (June 9, 1969).

74. See Open Letter, *supra* note 69.

75. See, e.g., *Ribicoff Hearings* pt. I, 69 (Statement of the Honorable Stuart Udall).

76. See, e.g., 1968 FED. WATER POLLUTION CONTROL ADMIN. REP. ON POLLUTION-CAUSED FISH KILLS.

77. See Macek, *Reproductions in Brook Trout (Salvelinus fontinalis) Fed Sublethal Concentrations of DDT*, 25 J. FISH. RES. BD. CANADA 1787 (1968).

78. Wurster, *DDT Reduces Photosynthesis by Marine Phytoplankton*, 159 SCIENCE 1474 (1968);

79. The estimated concentration of DDT in the human population of 12 parts per

who must make extraordinary demands upon their body fats, transmit to their children doses of DDT well in excess of the acceptable daily intake set by the World Health Organization.⁸⁰

The Mrak Commission concludes "that present levels of exposure to DDT [as well as dieldrin] among the general population have not produced any observable adverse effect in controlled studies on volunteers."⁸¹ On the other hand, the Commission concedes that recently conducted animal experiments have produced disturbing findings.⁸² It was reported at a scientific conference at Corvallis, Oregon, in August, 1969, that high concentrations of DDT caused physiological damage to the kidneys, liver and nerves of the affected test animals.⁸³ High residues of DDT have been associated with certain diseases in human beings such as cancer, hypertension and liver disease.⁸⁴ Only last year a study sponsored by the American Cancer Institute disclosed that DDT and other pesticides caused tumors in mice,⁸⁵ a conclusion with significant legal consequences.⁸⁶ Of this study the Mrak Commission says, "with the evidence now in, DDT can be regarded neither as a proven danger as a carcinogen for man nor as an assuredly safe pesticide; suspicion has been aroused and it should be confirmed or dispelled."⁸⁷ It is no answer to this evidence to argue that research as yet fails to demonstrate that the chemical pesticides stored in our body tissue is harmful to the species. At the very least, subjecting the entire population to a scientific experiment of unknown consequences is inexcusable.

C. *The Analytical Framework: Posing the Issues*

Though the documentation is extensive and disturbing, justifying legal prohibitions against the persistent pesticides requires evidence of another kind.

million is well in excess of Food & Drug Administration tolerance levels for DDT in many food products. Compare USE OF PESTICIDES, *supra* note 65, at 6 with 33 Fed. Reg. 2787 (1968). It should be remembered, however, that "tolerance" is often "erroneously interpreted to indicate the maximum level of intake which can be safely tolerated in a physiological sense, whereas the term, as used in the Food, Drug and Cosmetic Act, defines a legal limit based on the minimum requirement resulting from technological use, and is actually only a small fraction of the estimated no-effect level in man." Nat'l Acad. of Sciences—Nat'l Research Council, "No Residue" and "Zero Tolerance," 20 FOOD, DRUG & COSMET. L.J. 608, 617 n.6 (1965).

80. See MRAK REPORT 374. The scientific community has not recommended that breast feeding be abandoned in favor of other methods of infant nutrition. *Id.*

81. MRAK REPORT 233.

82. See MRAK REPORT 235-36.

83. See the unpublished papers of Ortega, *Pathology of DDT and Dieldrin in Rats*; Revzin, *Effects of Endrin in Birds & Monkeys*; Van Gelder, *The Electro Physiological and Behavioral Effects of Insecticides in Sheep*; Woolley, *Effects of DDT on the Nervous System of the Rat*. (These papers were presented at a three day symposium entitled "The Biological Impact of Pesticides in the Environment," held on August 18-20, 1969 at Oregon State University, Corvallis, Oregon).

84. See MRAK REPORT 325.

85. Innes et al., *Bioassay of Pesticides and Industrial Chemicals for Tumorigenicity in Mice: A Preliminary Note*, 42 J. NAT. CANCER INST. 1101 (1969).

86. See text accompanying notes 143-64, *infra*, for a discussion of the Delaney amendment.

87. MRAK REPORT 471.

Lawyers often talk about permissible and impermissible risks. Invariably, an assessment of the social utility of any conduct involves a judgment about the benefits realized as well as the costs exacted. Learned Hand has made the point in terms of the negligence formula familiar to every first year law student; "if the probability be called P ; the injury L ; and the burden B ; liability depends upon whether B is less than L multiplied by P ; i.e., whether B is less than PL ."⁸⁸ Regardless of the term used to describe undesirable conduct, it is indisputable that society has an interest in discouraging or forbidding activity that creates hazards to the population and the environment to a degree disproportionate to the benefits anticipated.

Viewed in these terms and at this level of abstraction, all pollution cases look alike. The polluter always gives us some good with the bad: the homeowner, commercial sprayer or farmer controls harmful insect pests by applying a chlorinated hydrocarbon pesticide; the mill manufactures paper or the smelter produces copper. These productive activities have unwelcome and injurious side effects: pulp wastes are toxic to marine life, emissions from the smelter destroy plants, and the applications of chemical pesticides are injurious to numerous non-target species. The issue in each case, in familiar legal and economic terms, is whether the costs of discontinuing the productive activity or, alternatively, of controlling the coincidental pollution, can be justified when measured against the benefits realized.

An evaluation of the issue, so described, is difficult. The Mrak Commission has given us strong evidence that many of the variables are still largely unknown. Moreover, because of our general inability to reduce intangibles to dollar terms, definitive economic answers to pollution issues are unlikely in any event. In fact, *none* of the significant parameters of resource allocation in pesticide use is known.⁸⁹ For example, we do not even know the extent to which chemicals are used in agriculture, much less the quantity used in the production of a specific crop or livestock commodity.⁹⁰ We are unable to judge, in dollar terms, the increase in productivity attributable to the continued use of DDT. We are incapable, in addition, of assessing in economic terms the risks to our marine and recreational resources and the toll upon wildlife exacted by this pest control technique. Nor can we place values upon the costs of substituting other inputs such as land, labor, fertilizer, and most importantly, alternative less persistent pesticides.⁹¹ And no strictly economic

88. *United States v. Carroll Towing Co.*, 159 F.2d 169 (2d Cir. 1947); see B. COMMONER, *SCIENCE AND SURVIVAL* 98-99 (1966).

89. See J. HEADLEY & J. LEWIS, *THE PESTICIDES PROBLEM: AN ECONOMIC APPROACH TO PUBLIC POLICY* 27 (1967).

90. See MRAK REPORT 57.

91. See Clement, *The Pesticide Problem*, 8 NAT. RES. J. 11, 13-14 (1968). The British have estimated that barring the use of aldrin, chlordane, dieldrin, DDT, endrin and Heptachlor would increase agricultural production costs by about 3.5% and "perhaps only for that period of time necessary to perfect alternative control measures." *Id.* at 13 & n.9, citing MINISTRY OF AGRICULTURE, FISHERIES AND FOOD (LONDON), REPORT OF THE

analysis can take into account value judgements and political priorities which often predominate in discussions of pollution control. In short, the nation may prefer to preserve the bald eagle though the decision entails a sacrifice in productivity far in excess of the dollar value of a few carrion-eating birds.

This is not to concede, however, that the merits of the controversy over further widespread usage of DDT deserve further debate. However imperfect our knowledge, the case against the persistent pesticides is as thoroughly proved as any other instance of modern pollution. Secretary Finch appears to be convinced: "We should all clearly recognize that to wait until the proof concerning all hazards of pesticide usage is academically indisputable may be more dangerous to us and our environment than we can afford We must act now or face the consequences of having acted too late."⁹² This note of urgency, long overdue, is being repeated throughout the world and across the country as state after state hastens to restrict severely the use of the persistent pesticides.⁹³ In large measure, it appears that the legal and political decision to eliminate the chlorinated hydrocarbon pesticides has been made. Ideally, this decision should be implemented by immediately confining usage to emergency situations requiring vector control by public health authorities.⁹⁴

The legal issues exposed by the DDT controversy and to be explored in this article are not whether to ban DDT and related chemicals but rather why steps to effectuate restrictions have been so long delayed; whether the actions undertaken go far enough and fast enough and are likely in any event to prove effective; and what role the law has played in eliminating this environmental contaminant. Most important, a legal analysis requires inquiry into possible reforms, apart from revision of the registration process already mentioned, that will protect against a repetition of this sorry experience with pesticides pollution.

D. *Essential Uses: The Essential Question*

The Mrak Commission's recommendations to restrict persistent pesticides to those uses "essential to the preservation of human health and welfare,"⁹⁵

ADVISORY COMMITTEE ON POISONOUS SUBSTANCES USED IN AGRICULTURE AND FOOD STORAGE, REVIEW OF THE PERSISTENT ORGANOCHLORINE PESTICIDES 6 (1964).

92. Statement of Secretary Finch, Dec. 23, 1969, p. 1; see Statement of President Richard M. Nixon, in N.Y. Times, Jan. 2, 1970, at 12, col. 5 ("It is literally now or never") (upon the occasion of signing the National Environmental Policy Act).

93. ARIZ. BD. OF PEST CONTROL, RULE 20 (as amended June 13, 1969); 3 CALIF. ADMIN. CODE §§ 2408, 2409, 2463.4 (regulations); FLA. ADMIN. CODE § 7E-2.22 (regulations effective Dec. 17, 1969); ILL. PEST. CONTROL LAW, REG. 1.1 (effective June 25, 1969); MICH. DEP'T OF AGRIC., NEWS RELEASES, April 18, 1969, and June 25, 1969; Statement by the SWEDISH NAT'L POISONS AND PESTICIDES BD., March 27, 1969; WASH. DEP'T OF AGRIC., EMERGENCY ORDER No. 1136, effective Dec. 29, 1969; WIS. ASSEMBLY BILL 163, 1969 Sess.; see N.Y. Times, Nov. 4, 1969, at 10 col. 3.

94. Michigan authorizes "limited registration of DDT formulations for use by government agencies in the performance of their duties involving public health and by professional structural pest control operators for indoor control of house mice, bats, ecto-parasites of mice, bats, and rats and lice of humans." MICH. DEP'T OF AGRIC., NEWS RELEASES, *supra* note 93.

95. MRAC REPORT 8.

without more, are empty posturizing. Skepticism is warranted in light of similar unfulfilled recommendations of other distinguished panels convened in recent years.⁹⁶

In 1963 the President's Science Advisory Committee declared that "elimination of the use of persistent toxic pesticides should be the goal."⁹⁷ In 1965 the same group recommended that "unnecessary use of pesticides should be avoided wherever possible."⁹⁸ A sub-panel report noted emphatically that, "[s]ubstantial reduction in insecticide use, in specific cases as much as 50%, can be made by applying our present knowledge of pests and their control."⁹⁹ In 1966 the Committee on Government Operations (the Ribicoff Committee) of the United States Senate recommended that industry and government "accelerate the development of non-chemical pest-control methods."¹⁰⁰ In May of 1969 a report of the National Research Council of the National Academy of Sciences urged "that further and more effective steps be taken to reduce the needless or inadvertent release of persistent pesticides into the environment."¹⁰¹ In September of 1969 the American Chemical Society went so far as to recommend that "where possible, highly persistent materials should be replaced by rapidly degradable materials."¹⁰² The Mrak Commission's recommendation to eliminate "non-essential" uses thus offers no new insights.

Some action is at last under way although the consequences remain obscure. On November 24, the Pesticides Regulation Division of USDA announced a cancellation of registrations, to become effective in thirty days, for all products containing DDT and bearing directions for use by persons other than public officials in aquatic areas and for use on shade trees, tobacco and in and around the home.¹⁰³ Included was a pronouncement that, "The Department is considering cancellation of any other uses of DDT unless it can be shown that certain uses are essential in the protection of human health and welfare and only those uses for which there are no effective and safe substitutes for the intended use will be continued."¹⁰⁴ Ninety days were allotted during which comments would be received. A final disposition is promised by December 31, 1970. In short, the Pesticides Regulation Division, inspired by the recommendations of the Mrak Commission, has taken steps to cancel DDT registrations for several recommended uses and has initiated rule making proceedings to determine whether other uses are "essential" to the public wel-

96. See text accompanying notes 97-102 *infra*.

97. USE OF PESTICIDES 28.

98. U.S. PRESIDENT'S SCIENCE ADVISORY COMM., ENVIRONMENTAL POLLUTION PANEL, RESTORING THE QUALITY OF OUR ENVIRONMENT 17 (1965).

99. *Id.* at 291.

100. RIBICOFF REPORT, *supra* note 19, at 68.

101. JENSEN COMMITTEE REPORT 29.

102. Summary and Recommendations, Report of the American Chemical Society, Cleaning Our Environment—The Chemical Basis for Action, in CHEMICAL & ENGINEERING NEWS, Sept. 8, 1969, at 9.

103. 34 Fed. Reg. 18827 (1969).

104. *Id.*

fare.¹⁰⁵ Six chemical companies, exercising their rights under FIFRA, already have challenged the proposed cancellations by requesting that the matter be referred to a scientific advisory committee for a recommendation.¹⁰⁶

Reaction to the release of the Commission's findings and the subsequent initiatives by USDA has been swift and laudatory. The Environmental Quality Council of the President's Office applauded the actions taken by Secretary of Agriculture Hardin with regard to DDT registrations, pointing out that the proposed cancellations would affect perhaps 35% of the DDT used in the country.¹⁰⁷ The New York Times praised Secretary Finch for taking a "giant step forward in reducing the menace to all living creatures of the long-lasting poisons that have been used with such careless and ignorant abandon for so many years."¹⁰⁸ The Washington Post observed, "We think the whole country will be relieved that a broad program to eliminate this new man-made menace in our environment has been launched."¹⁰⁹ Editorial comment across the nation reiterated these sentiments.¹¹⁰

Lest complacency attend this "giant step forward" in the interests of consumer and environmental protection, however, some precautions are in order. Plainly, the proposed cancellations, if and when they become effective, are not self-enforcing. Rewriting a few labels will accomplish no reform. The assumption that pesticides will be used according to directions is demonstrably fallacious.¹¹¹ So long as DDT is sold in bulk, as it presently is, it may be used by the grower on tobacco or any other crop with few meaningful controls.¹¹² The proposed cancellation with respect to home uses ultimately may prove effective but only if the manufacturers abandon home use packaging, a decision that is not inevitable.¹¹³ The proposed cancellation restricting uses in aquatic environments except where essential for control of disease vectors "as determined by public health officials" is largely descriptive of present practice, since nobody uses DDT in aquatic environments except public health officials whose heroics in the interests of mosquito control often have demonstrated little regard for the environment.¹¹⁴

In addition, for any cancellation to prove effective some commitment by

105. Recently similar steps were taken to cancel the registrations of aldrin and dieldrin for "aquatic" uses. See Wall St. J., March 10, 1970, at 5, col. 2.

106. See N.Y. Times, Jan. 6, 1970 at —, col. —.

107. See Press Release, Office of the White House Press Secretary, No. 20, 1969.

108. N.Y. Times, Nov. 14, 1969, at 46, col. 2.

109. Washington Post, Nov. 13, 1969, at A18, col. 2.

110. E.g., Seattle Post-Intelligencer, Nov. 19, 1969 at 6, col. 1.

111. See text accompanying notes 217, 235 *infra*.

112. See *id.* for a discussion of the few effective controls on pesticide usage.

113. It is arguable, for example, that DDT may still be used on home gardens and therefore that form of packaging will be justifiable.

114. See, e.g., Croker & Wilson, *Kinetics and Effects of DDT in a Tidal Marsh Ditch*, 24 TRANS. AMER. FISH. SOC. 152 (1965); Laycock, *The Beginning of the End for DDT*, AUDUBON MAGAZINE, July, 1969, at 37, 40-41; Woodwell *et al.*, *DDT Residues in an East Coast Estuary: A Case of Biological Concentration of a Persistent Insecticide*, 156 SCIENCE 821 (1967).

PRD, beyond what has been demonstrated in the past, is essential. As mentioned, to date, no registration ever has been cancelled over the formal opposition of the chemical pesticides industry.¹¹⁵ Also, it is perhaps naive to assume that, after cancellation, notices will be sent to the distributors of the affected products.¹¹⁶ And to expect PRD to take the obvious step of seizing supplies bound for the homeowner is to expect action inconsistent with the traditions of the agency. Twenty years elapsed before PRD initiated its first action to recall products found to be unsafe.¹¹⁷ Despite the cancellation, on August 1, 1965, of 58 thallium products, which had resulted in numerous accidental poisoning cases among children, pesticides containing thallium still were available in retail outlets two years later, because the responsible officials neglected to obtain information on the quantities and location of products that had entered marketing channels prior to the cancellation date.¹¹⁸ Other reasons for harboring continuing doubts about the decisiveness of the government's most recent legal steps against the persistent pesticides require a further look at PRD and the chemical pesticides industry.

E. *The Agency and the Industry: Commitment to the Status Quo*

It deserves emphasis that the USDA, which has scarcely distinguished itself as a vigorous proponent of the public interest, is the agency presently responsible for deciding what DDT uses are essential. For years the agency, systematically and flagrantly, has failed to enforce the basic pesticides legislation protecting the American consumer.¹¹⁹ Through unfaithful administration the legislation as written has been reduced to a mockery.¹²⁰

The experience with DDT is illustrative. Under FIFRA an insecticide is misbranded if when used in accordance with commonly recognized practice it causes injury to non-target species.¹²¹ For more than 20 years DDT has been so implicated,¹²² with the accumulating scientific evidence about its effects on non-target species becoming more persuasive and disturbing with each passing year. Nothing was done. As late as July 14, 1969, a departmental spokesman was quoted as saying that he was aware of no evidence indicating that DDT was unsafe.¹²³ Incredibly, under existing regulations DDT

115. See DEFICIENCIES REPORT 8.

116. *Id.*

117. *Pesticides Pollution: Part II*, in 1969 CONSUMER REPORTS, 478, 480 (quoting the Washington Post).

118. COMPTROLLER GENERAL'S REPORT TO THE CONGRESS ON NEED TO IMPROVE REGULATORY ENFORCEMENT PROCEDURES INVOLVING PESTICIDES 11-13 (1968).

119. DEFICIENCIES REPORT and *Deficiencies Hearings*, *passim*.

120. *Id.*

121. 7 U.S.C. § 135 (z) (2) (g) (1964).

122. *E.g.*, Benton, *Effects on Wildlife of DDT Used for Control of Dutch Elm Disease*, 15 J. WILDLIFE MANAGEMENT 20 (1951); Couch, *Effects of DDT on Wildlife in a Mississippi River Bottom Woodland*, in TRANSCRIPT, 11th NAT'L AMER. WILDLIFE CONF. 323 (1946).

123. See 115 CONG. REC. 5889 (daily ed. July 14, 1969) (quoting Dr. George W. Irving, administrator of the Agricultural Research Service.)

is recommended for use on over 200 field crops.¹²⁴ It remains to be seen how many of these uses are deemed "essential." Finally, after years of delay PRD has initiated some action of limited scope, but this much has occurred only upon the recommendation of a Commission appointed by the Secretary of another department and following disclosures that amount to a national scandal. It is hardly surprising that significant segments of our population have legitimate doubts about the willingness or ability of some public officials to meet their responsibilities.

In theory, a cancellation of registration may proceed upon notification of the registrant and an explanation of the reasons for the proposed action. The registrant may acquiesce, request a public hearing or request that the matter be referred to an advisory committee of the National Academy of Sciences.¹²⁵ In practice, cancellation proceedings may be suspended indefinitely if a registrant calls the bluff of PRD by requesting a hearing or referral to an advisory committee.¹²⁶ Since the industry has requested such a referral with respect to the proposed DDT cancellations, it remains to be seen whether PRD's tradition of inaction will be maintained. Furthermore, though there is nothing in the legislation to indicate that the burden of proof with respect to the safety of a product should shift once the manufacturer secures an initial registration, PRD has assumed that it has the obligation to prove the product was unsafe before a registration could be cancelled.¹²⁷ Clearing the hurdle of an initial registration thus has the practical effect of immunizing a pesticide from future scrutiny.

The influence of PRD's administrative myopia deserves emphasis. State registrations for chemical pesticides often incorporate explicitly existing federal registrations.¹²⁸ Some state officials believe they are without the power to forbid uses authorized by PRD.¹²⁹ Recommendations in the state spray handbooks, which are the bibles for the user,¹³⁰ follow religiously the current wisdom as articulated by PRD. The competitive disadvantage threatening local

124. See USDA, SUMMARY OF REGISTERED AGRICULTURAL PESTICIDE CHEMICAL USES 212-225a (June 20, 1967).

125. 7 U.S.C. § 135b (1964).

126. See DEFICIENCIES REPORT 47-50.

127. *Id.* at 51-52. On the significance of burden of proof rules in environmental litigation, see Krier, *Environmental Litigation and the Burden of Proof: Some Comments and Suggestions*, (unpublished paper presented at Conference on Law and the Environment on file at The Conservation Foundation, Wash., D.C. Sept., 1969.)

128. *E.g.*, REV. CODE WASH. § 15.57.020(27) (1961).

129. See Statement of the Honorable Donald M. Moos, Wash. Director of Agriculture, Dec. 29, 1969, p. 4 (on file with author) ("The federal government controls the registration and labeling of pesticides in interstate commerce. The State of Washington has conformed and will continue to conform to any restrictions on registration or labeling adopted by the federal government.")

130. The agricultural extension service in each state prepares detailed hand books for the user recommending types and amounts of pesticides for the control of insects and frequency and content of the application. In practice, these books prepared by entomologists are the how-to-do-it kits for the applicator and, consequently, are highly influential in determining pesticide usage throughout the country.

growers, who are denied access to DDT still available in neighboring states, is another principle stumbling block to unilateral bans in the absence of action at the federal level. In the State of Washington, for example, despite lengthy hearings, the Director of Agriculture has refused to cancel registrations affecting agricultural uses without a pronouncement from a higher authority on what uses are essential.¹³¹

Resolution of the DDT issue, then, depends in large measure upon the outcome of the rule-making proceeding which is presently pending before PRD. Legal, institutional and economic pressures combine to endow this agency with pivotal influence over the persistent pesticides. Its past performance suggests that governmental and private watchdogs should remain alert.

That the chemical pesticides industry also deserves a lion's share of the responsibility for postponing judgment day on the persistent pesticides is not to be doubted. Industry opposition has been determined, inflexible; sometimes frantic and always discouraging to those seeking a cooperative approach to combatting pesticides pollution. Despite FIFRA, the industry, through domination of PRD, retains effective control over the registration, sale and use of chemical pesticides in this country. The consequences of this self-regulation have been indelibly and tragically recorded throughout the environment and our population.

At the outset, it is understandable why the industry would take an advocate's view of the DDT issue. The chemical was a Nobel prize winner, and has had a proud history. It still performs yeoman service in controlling malaria throughout the world. DDT is persistent and cheap for the applicator and farmer. Its elimination for some uses could result in severe short-run economic dislocation. Yet DDT's persistence, proclaimed as a positive virtue in pest control operations, is the same quality that jeopardizes many non-target organisms. And the economic argument overlooks the immense cost to the environment as well as the long-range spiraling costs of maintaining sophisticated chemical control programs.

What is more difficult to understand is the vehemency and tenacity with which many industry representatives have clung to an untenable position. Throughout the controversy, the attack on DDT has been viewed largely as an assault on the entire chemical pesticides industry:¹³² opponents of DDT were pure food nuts, bug lovers, Rachel Carsonites or worse.¹³³ Less than a

131. Wash. Dep't of Agric., Emergency Order No. 1136, effective Dec. 29, 1969.

132. See 27 NEWS & PESTICIDE REVIEW 2 (1969).

133. See, e.g., McLean, *Pesticides and the Environment*, 17 BIO-SCIENCE 613, 615-16 (1967) (the author, an attorney, represented the industry task force in the Wisconsin DDT hearings); Testimony of Thomas J. Jukes, Professor of Medical Physics, University of California, Washington DDT Hearings; Testimony of Dr. Hardin B. Jones, Assistant Director, Donner Laboratory, University of California, *id.*; Testimony of Dr. Donald A. Spencer, National Agricultural Chemicals Ass'n, *id.*; Testimony of Mr. Max Sobelman, Plant Superintendent, Montrose Chemical Corp. of California, *id.*; Seattle Times, October 16, 1969, at 9, col. 1. A spokesman for Shell Chemical Co. has

month before Secretary Finch's release of the Mrak Commission recommendations, industry spokesmen were making preposterous assertions that the elimination of DDT, which was said to symbolize all pesticides, would reduce by one-half food production in the United States,¹³⁴ or that the movement to ban DDT was essentially an attack on the entire capitalistic profit system.¹³⁵ No reputable scientist would deny that the persistent pesticides have been a factor of significance in reducing the peregrine falcon to the verge of extinction.¹³⁶ Industry representatives did.¹³⁷ Unwarranted, exaggerated predictions of famine and plague were part of the accepted rhetoric of the industry's resistance.

Undoubtedly, the chemical pesticides industry is not the first to stretch a point in support of a special interest. Sloppy science, misleading rhetoric and outright emotionalism no doubt have characterized some of the assaults against DDT. Exposing industry tactics is nevertheless valuable to emphasize that more is involved to law reform in pollution cases than having the truth on your side. Ideally, scientists should be able to agree on indisputable scientific propositions. Presentation of the data to the decision-maker then would result in an appropriate political decision, reconciling conflicting interests. But this model overlooks obfuscation, half-truths and outright unscientific balderdash presented by industry spokesmen to unsophisticated or impressionable legislators or administrators. The repeated observation among law-makers that "scientists never agree"¹³⁸ is not so much an accurate description of the state of our knowledge but rather an observation about what often happens to the integrity of that data in a political forum.

One legal technique for minimizing distortions which impede the pursuit of truth in the regulation of chemical pesticides is the time-honored tradition of cross-examination. In Wisconsin, industry and agency personnel were embarrassed repeatedly by competent cross-examination, a risk that attends stubborn affirmation of an untenable position.¹³⁹ In Washington, where the proceedings were treated as administrative rule-making, the industry performed with greater confidence and recklessness because no rights of cross-examination were preserved. Beyond this, every legal initiative that promotes a hearing for the unrepresented consumer contributes to assuring the integrity of the scientific premises of administrative action.¹⁴⁰ The role of the law as

stated that if aldrin is banned his company would continue to sell the product. Cavender, *The Big Pesticide Battle*, TOP OPERATOR, March, 1970, at 31.

134. Testimony of Thomas H. Jukes, *supra* note 133.

135. Testimony of Max Sobelman, *supra* note 133.

136. See J. HICKEY, PEREGRINE FALCON POPULATIONS: THEIR BIOLOGY AND DECLINE (1969).

137. Testimony of Thomas H. Jukes, *supra* note 133.

138. See Ribicoff Hearings pt. 3, at 664.

139. See Rogin, *All He Wants to Save is the World*, SPORTS ILLUSTRATED, Feb. 3, 1969, at 24; Wurster, *The Wisconsin DDT Hearings*, 19 BIO-SCIENCE 809 (1969).

140. See Nader, *Law Schools and Law Firms*, THE NEW REPUBLIC, Oct. 11, 1969, at 20.

an instrument for realigning institutions to deal more thoroughly and responsibly with their regulatory problems will be next discussed. One reform already mentioned would require the concurrence of HEW and USDI in the registration of chemical pesticides. Other improvements are reflected in the following recommendations of the Mrak Commission.

II. REORGANIZATION OF HEW

Recommendation II. Improve cooperation among the various elements of the Department of Health, Education and Welfare which are concerned with the effects of pest control and pesticides.

Recommendation IX. Establish a Department of Health, Education and Welfare Clearinghouse for pesticide information and develop pesticide protection teams.

Recommendation VI. Create a pesticide advisory committee in the Department of Health, Education and Welfare to evaluate information on the hazards of pesticides to human health and environmental quality and to advise the Secretary on related matters.

All of these recommendations are commendable and responsive to the glaring inadequacies of present regulation. Departmental inefficiencies, condemned in Recommendation II, are ever present and always to be deplored. The proposal to establish a clearinghouse on technical information in Recommendation IX recognizes that the time lag between scientific discoveries and decisive political action implementing this knowledge must be reduced. The inability of the agencies to assimilate scientific data and to act accordingly has been demonstrated time and again in the regulation of chemical pesticides. Sixteen years elapsed between the publication of research indicating that the use of lindane around food would result in contamination and administrative action by PRD eliminating the danger.¹⁴¹ As early as 1947 a study sponsored by the Food and Drug Administration (FDA) disclosed that rats which were fed DDT suffered an increased incidence of liver tumors.¹⁴² With the passage of the Delaney amendment to the Food, Drug & Cosmetic Act in 1958,¹⁴³ Congress unequivocally embraced a policy instructing the FDA to exclude from the food supply all substances found to be carcinogenic in animal tests. One would suppose that, on this ground alone, continued use of DDT should have been questioned years ago by the agency. Unfortunately, bringing the administrator and the scientist together proved to be administratively impossible.

The proposal to establish a Pesticide Advisory Committee implicitly acknowledges that HEW, as presently constituted, is poorly organized to

141. See DEFICIENCIES REPORT 32.

142. Fitzhugh & Nelson, 89 J. PHARMACOL. EXP. THERAP. 18 (1947). One 17 year old study was highly influential in the decision to eliminate cyclamates. See Press Conference of Secretary Robert H. Finch, Oct. 18, 1969, pp. 15, 19, 31-32 (Transcript).

143. 21 U.S.C. § 348(c) (3) (A) (1964).

protect the public welfare against pesticide risks. The Commission should be commended for recognizing that "advisory services of a group drawn from the professional, industrial and academic specialists in related fields can provide unique and essential services."¹⁴⁴ Perhaps non-governmental scientists are less confined by political pressures or the unproductive syndrome of bureaucratic self-justification. There is some evidence that the agencies are unable to attract and hold capable scientists against the competitive lure of private industry and the academic community.¹⁴⁵ Outstanding research scientists are inclined to shun the bureaucracy's "timetables and deadlines, and the digressions from any systematic development of [their] own research,"¹⁴⁶ with a consequent impairment in the responsiveness of policy to laboratory findings. In the words of ex-FDA Commissioner Herbert Ley, "A majority of the medical staff people are retirees, persons who have suffered coronaries or who have personality problems."¹⁴⁷

The Commission's insistence that FDA reorganize itself better to absorb the scientific facts is a commendable objective. One point is indisputable. Years of governmental mismanagement and industry irresponsibility have produced a crisis in pesticides pollution. Changes in policy, now imminent, will have occurred only upon the recommendation of a largely non-governmental group of scientists who have contributed to the Mrak Commission report. The suggestion to institutionalize this Commission as a continuously functioning Pesticide Advisory Committee deserves widespread support. Such a "third force," if effectively implemented, could contribute materially to assuring that governmental policy is more responsive to scientific verities.¹⁴⁸

One word of caution is in order, however. An Advisory Committee is only as strong as its personnel and as influential as the agency wishes it to be. Reorganizing HEW is no guarantee against further mismanagement if representatives of special interests dominate the group. The performance of PRD's Task Force on Pesticides Regulation illustrates what can happen when "bold new initiatives" originate from those who are satisfied with the status quo.¹⁴⁹ A genuine commitment is necessary to transform an advisory committee into a viable institution. Government today is becoming increasingly dependent

144. MRAK REPORT 11.

145. The low educational level among state officials responsible for enforcing pesticides legislation strongly suggests that significant policy initiatives at this level are unlikely, especially those based on scientific research that, to the uninitiated, sounds like a fairy tale. See HOUSE COMM. ON GOV'T OPERATIONS, CONSUMER PROTECTION ACTIVITIES OF STATE GOV'TS, H.R. REP. NO. 921, 88th Cong., 1st Sess. 140 (1963). The FDA also lacks qualified personnel essential to informed decisions. See *Ribicoff Hearings* pt. 3, at 735-36, 784.

146. Willcox, *Public Protection, Private Choices and Scientific Freedom: Food, Drugs and Environmental Hazards*, 18 FOOD, DRUG & COSMET. L. RPTR. 321, 334 (1963).

147. N.Y. Times, Dec. 31, 1969, at 1, col. 6.

148. See note 225 *infra*.

149. See REPORT OF THE TASK FORCE ON THE PESTICIDES REGULATION DIVISION (1965), in *Deficiencies Hearings* 248-95 (App. 6).

upon special commissions for policy initiatives. Yet little academic thought has been given to the process of selecting these committees and their staffs and their ability to offer unbiased, thorough policy directives. To assure continuing responsiveness within HEW, the Mrak Commission's successor, the proposed Pesticides Advisory Committee, must include spokesmen for all points of view. All too often the politics of pesticides has interfered with the transmission of scientific truths to the political decision-maker.

III. IMPROVE THE ADMINISTRATION OF LAWS REGULATING THE RELEASE OF CHEMICAL PESTICIDES INTO THE ENVIRONMENT AND THE FOOD SUPPLY

Recommendation VII. Develop suitable standards for pesticide content in food, water and air and other aspects of environmental quality, that (1) protect the public from undue hazards, and (2) recognize the need for optional human nutrition and food supply.

The recommendation that HEW develop suitable standards for pesticide content in food is hardly revolutionary since the Secretary has had this responsibility under existing law since an amendment to the Food, Drug & Cosmetic Act in 1938.¹⁵⁰ The Commission is specific, though somewhat elliptical, in rebuking the FDA: "Tolerances for DDT residues in fish should be subjected to immediate review and reflect the relative importance of the food in the diet."¹⁵¹ Before celebrating this new initiative in consumer protection, however, it should be remembered that in 1963 the President's Science Advisory Committee recommended that "the Food and Drug Administration proceed as rapidly as possible with its current review of residue tolerances, and the experimental studies on which they are based."¹⁵² Proceeding "as rapidly as possible" surely presupposes action beyond the appointment of another commission six years later to reiterate earlier recommendations. In truth, lax administration by the FDA combined with the wholesale default of the PRD has resulted in the present crisis in the enforcement of the pesticides laws.

The past performance of the FDA gives little cause for optimism. The DDT tolerances, which remained unchanged for eighteen years, were established on the basis of extensive public hearings held in 1950, a date well back in the dark ages of our pesticides experience.¹⁵³ Four years later the FDA still had not issued general tolerances, a situation resulting in great uncertainty within the food industry.¹⁵⁴ The solution, supported by the industry and the agency and enacted into law in the form of the Miller Amendment, was to vest the power to initiate tolerance proceedings in interested manufacturers.

150. 52 Stat. 1049 (1938).

151. MRAK REPORT 13.

152. USE OF PESTICIDES, *supra* note 65, at 20.

153. See CCH FOOD, DRUG & COSMET. LAW REPTR. ¶ 54,447.

154. See SEN. REP. NO. 1635, 83d Cong., 2d Sess. 2 (1954).

An applicant must submit information, which remains confidential,¹⁵⁵ concerning the chemical identity of the compound, its toxicity to laboratory animals, and the amount, frequency and time of application on the crops covered. He is required to submit data disclosing the residue that would remain following the recommended application of the pesticide and information supporting the tolerance requested.¹⁵⁶ The FDA, either on its own or after receiving a report from an advisory committee, either must establish a tolerance, which may be zero, or exempt a chemical from the tolerance requirements. Thus, unlike the former practice, tolerances now may be established without a public hearing.¹⁵⁷

The FDA supports the present procedure, largely on the ground that administration otherwise would be impossible.¹⁵⁸ It is nevertheless clear that the power to establish tolerances is largely a matter of the manufacturer's initiative, with the government's role being reduced to reviewing the submitted data. The consequences have been detrimental. First, the *ex parte* nature of the proceeding and the one-sided form of the submission have resulted in setting tolerance levels that are unacceptable from the consumer's point of view. Second, the staff of the FDA, perhaps because the initiative is not theirs alone, has been unable to muster the resources to develop a comprehensive, enlightened set of tolerances. In the words of one participant, "because of unclear procedural guidelines, divergent points of view and the everchanging methodology of the pesticide industry, a significant amount of work has never produced a truly complete set of standards."¹⁵⁹ Steps were taken in 1968 to reduce DDT tolerance levels on a number of food products on a gradual basis to become effective finally on January 1, 1970.¹⁶⁰ The Mark Commission now discloses that many of these recently revised tolerances are out of date in light of the disturbing new evidence implicating DDT as a health hazard.

Reform perhaps need not go so far as to revert to the former practice where tolerances are set by the FDA only on the basis of information adduced at a public hearing. Short of this, however, all data used as a basis for granting registration and establishing tolerances should be published, thus allowing the hypothesis and the "validity and reliability" of the information to be subjected to "critical review" by the public and the scientific com-

155. 21 U.S.C. § 346a(f) (1964).

156. 21 U.S.C. § 346a(d) (1964).

157. See SEN. REP. No. 1635, 83rd Cong., 2d Sess., 4-5 (1954). Compare Oser, *Where is Industry's Voice in Food Regulations?*, 23 FOOD, DRUG & COSMET. L. RPTR. 317 (1968) (discussing procedures for establishing tolerances).

158. See SEN. REP. No. 1635, 83rd Cong., 2d Sess. 5 (1954).

159. Rohrman, *Pesticide Laws and Legal Implications of Pesticide Use—Part I*, 23 FOOD DRUG COSM. L.J. 142, 151 (1968).

160. 33 Fed. Reg. 2787 (1968); see 20 Fed. Reg. 1473 (1955) (order establishing tolerances on the basis of the 1950 hearings).

munity.¹⁶¹ Thus, the FDA would be afforded some insights from a segment of the community that is not commercially interested.

Also important are regulatory priorities. The commission recommends that the proposed Pesticide Advisory Committee consider a "graded series of regulatory actions developed in proportion to the extent of environmental contamination of risk thereof, in relation to total human exposure, actual daily intake, and total body burden of pesticide residues."¹⁶² Grade IV would include those pesticides creating "widespread or severe environmental contamination or general risk" to human health.¹⁶³ A pesticide so designated would be banned for "all non-essential uses" and removed from the general market. Future use would be approved by permit only.

What the Commission is saying is that some pesticides are so manifestly inappropriate for general use that they do not merit routine consideration under the tolerance procedures. Presumably, DDT and the related chlorinated hydrocarbon pesticides fall into this unhappy category. A system of classification would assist the agency to allocate resources, to scrutinize uses, and to monitor the effects of those compounds whose biological and chemical properties are predictably dangerous. Requiring use by permit would avoid the indiscriminate application that is the inevitable result of a regulatory scheme that depends upon the fictitious controls of a label or spray handbook. Legislative action at the state level requiring use by permit also would be desirable. The Commission wisely reinforces its precautionary approach by recommending an expansion of the use of experimental labels which allow a manufacturer to place a relatively small amount of a product on the market.¹⁶⁴

In sum, the Mrak Commission's recommendations to rethink the tolerance levels suggest that some measure of effective regulation may be restored after-the-fact by the FDA, although the crucial decisions affecting registration remain largely responsive to the whims of PRD. It should be remembered, however, that tightening tolerance levels and seizing more contaminated food

161. USE OF PESTICIDES 17.

162. MRAK REPORT 13.

163. *Id.*

164. *See id.* 75-76. Manifestly, sharply confining the use of a new compound having unknown effects is to be preferred to authorizing its release, willy nilly, among the population at large. On the other hand, one would hope that exhaustive testing would occur before a pesticide is registered even on an experimental basis. In this respect, the Commission's justification for expanding the concept of experimental permits is not entirely satisfactory:

the limited sale in regular commercial channels without [sic] the requirement of [accounting for] biological results on the material should be permitted or even made mandatory for 1 year prior to a full registration. This would go even further toward enabling the manufacturer to assess the product in the market place but with a limited exposure on his part and would similarly provide the regulatory agency with a greater opportunity to assess possible threats to man or his environment.

Id. at 76.

plainly are not substitutes for effective predictive judgments at the registration level.

Recommendation V. Minimize human exposure to those pesticides considered to present a potential health hazard to man.

This recommendation, like No. VII, could hardly be praised for breaking new ground. Congress specifically has instructed the Secretary of HEW, in establishing tolerance levels, to give consideration to the "ways in which the consumer may be affected by the . . . pesticide chemical or by other related substances that are poisonous or deleterious."¹⁶⁵ The Commission introduces a note of urgency by conceding that, in recent "impressive" animal studies, several compounds, including DDT, have been identified as carcinogenic; others have been adjudged teratogenic.¹⁶⁶ Causing cancer or birth defects in test animals appears to be sufficient grounds for further recommendations "to reexamine the registered uses of the materials . . . to institute prudent steps in order to minimize human exposure" and "to undertake additional appropriate evaluatory research."¹⁶⁷ The subcommittee on mutagenicity reiterated these sentiments by emphasizing that the widespread use of pesticides may be damaging to our heredity:

If this is so, we may be unwittingly harming our descendants. Whether this is happening, and if so, what is the magnitude of the effect, is regrettably unknown. Surely one of the greatest responsibilities of our generation is our temporary custody of the genetic heritage received from our ancestors. We must make every reasonable effort to insure that this heritage is passed on to future generations undamaged. To do less, we believe, is grossly irresponsible.¹⁶⁸

Suggesting that HEW take a hard look at pesticides that may cause cancer or genetic mutations will generate little controversy. The same cannot be said for the Commission's treatment of the Delaney amendment.

Recommendation VIII. Seek modification of the Delaney clause to permit the Secretary of the Department of Health, Education and Welfare to determine when evidence of carcinogenesis justifies restrictive action concerning food containing analytically detectable traces of chemicals.

A. The Legislation: Cutting Down on Cancer

The Delaney amendment was born amidst the cranberry scare of the late nineteen fifties.¹⁶⁹ The anti-cancer clause was not included in the original food

165. 21 U.S.C. § 346a(b) (1964).

166. MRAK REPORT 471.

167. *Id.* at 10-11.

168. *Id.* at 568.

169. See, e.g., Note, *Agricultural Pesticides: The Need for Improved Control Legislation*, 52 MINN. L. REV. 1242, 1251-52 (1968); *Hearings on Dep't of Agriculture Appropriations for 1966 Before the Subcomm. on Dep't of Agriculture and Related Agencies*

additive bill¹⁷⁰ reported unanimously by the Committee on Interstate and Foreign Commerce on July 28, 1958. The provision was inserted as a committee amendment after the bill had been reported to the House, and it appeared in the legislation which was enacted into law on September 6, 1958.¹⁷¹ No hearings were held on the amendment. The legislative history discloses that the clause was thought to be superfluous since the bill was intended to exclude from the food supply "any substances the ingestion of which reasonable people would expect to produce not just cancer but any disease or disability."¹⁷²

The Delaney amendment states unequivocally, with exceptions not here material, that no food additive "shall be deemed to be safe if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal."¹⁷³ In 1960, Congress incorporated a similar clause into the color additive amendments to the Food, Drug & Cosmetic Act.¹⁷⁴ Any food containing an unsafe food additive or color additive is adulterated within the meaning of the act and is subject to seizure.¹⁷⁵

The anti-cancer amendment quickly became embroiled in a national controversy over chemical additives. In January, 1958, USDA registered the herbicide aminotriazole as a weedkiller for use on cranberry bogs on a "no residue" basis because the proposed pattern of use indicated that no residues would result on that year's crop. In February, 1959, a petition requesting a tolerance of 1 part per million for aminotriazole for use on cranberries, apples and pears was filed with the FDA. In May, 1959, on the basis of the recently enacted Delaney amendment, the FDA concluded that a tolerance was inappropriate because pathological studies disclosed that the herbicide produced cancer in test animals. Later that year, upon discovering that aminotriazole had been used on cranberry bogs, the FDA moved to seize 300,000 pounds of cranberries. A press release, issued by HEW Secretary Fleming on November 9, pointed out that the chemical involved was carcinogenic and, more dramatically, that it would take until Christmas to bury the contaminated cranberries "with the use of bulldozers." At the time USDA, consistently with its tradition, opposed the publicity, fearing that it would result in unnecessary public alarm.¹⁷⁶ Predictably, not many people ate cranberries for

Appropriations of the House Comm. on Appropriations, 89th Cong., 1st Sess., pt. 1, at 175-79 (1966) [hereinafter cited as Whitten Committee Hearings].

170. H.R. REP. Nos 2284, 85th Cong., 2d Sess. (1958).

171. 21 U.S.C. § 348(c)(3)(A) (1964).

172. S. REP. No. 2422, 85th Cong. 2d Sess. 11 (1958).

173. 21 U.S.C. § 348(c)(3)(A) (1964).

174. 21 U.S.C. § 376(b)(5)(B) (1964).

175. 21 U.S.C. §§ 342(a)(2)(A), 342(c) (1964). See 21 U.S.C. § 344 (1964).

176. In recent years USDA has handled the problem of "unfavorable" publicity quite adroitly. Under section 6(e) of FIFRA, 7 U.S.C. § 135d(e) (1964), the Secretary is required to "give notice of all judgments entered in actions instituted under the authority . . ." of the act. No notices were published between November, 1964, and December, 1967,

Thanksgiving that year. The excitement ultimately cost cranberry growers eight and one-half million dollars, a loss which was later reimbursed by the government.¹⁷⁷

The Delaney amendment has retained its affinity for controversy. Curiously, of the fourteen Commission recommendations the only one specifically calling for legislative action is the request for the modification of the Delaney amendment. The wording of the recommendation is concededly obscure but appears to invite legislation authorizing the Secretary to establish tolerance levels for carcinogenic pesticides in food products.¹⁷⁸ Secretary Finch has moved promptly to implement the recommendation.¹⁷⁹ At the outset it is somewhat surprising that a distinguished Commission on Pesticides and Their Relationship to Environmental Health would insist so vigorously upon the revision of legislation plainly intended to protect human health. Little consolation is found in the Commission's defensive claim that the recommendation "is made in order to permit determinations essential to the protection of human health, not to justify irresponsible increases in the exposure of the population to carcinogenic hazards."¹⁸⁰

Secretary Finch's explanation of this recommendation at his press conference on November 12, 1969,¹⁸¹ borders on the incredible. The nation is told that "it is important that we interpret the Delaney amendment to the Federal Food, Drug and Cosmetic Act specifically as it was enacted. This amendment requires the removal from interstate commerce of any food additive shown to be capable of inducing cancer when fed to experimental animals." In practice, interpreting the Delaney amendment "as it was enacted" means

because the employee who had exercised those responsibilities had retired and was not replaced. See DEFICIENCIES REPORT at 27.

177. See *Whitten Committee Hearings* 175-79.

178. The recommendation also can be read as suggesting the abandonment of the "zero tolerance" notion in favor of a more workable standard of "detectable residues thought to be pharmacologically insignificant." The latter formulation represents the FDA's current administrative interpretation of a "zero tolerance." See note 193 *infra*.

179. HEW Press Release, Dec. 23, 1969.

180. MRAC REPORT 15.

181. To enable us to proceed with this policy of reevaluation it is important that we interpret the Delaney Amendment to the Federal Food, Drug, and Cosmetic Act specifically as it was enacted. This amendment requires the removal from interstate commerce of any food additive shown to be capable of inducing cancer when fed to experimental animals. The Delaney Amendment was conceived in high purpose and has served a useful function. The Department's General Counsel has pointed out that the Delaney Amendment does not apply to pesticide chemical residues in raw agricultural commodities or in foods processed from lawful crops. Nor does it apply to the unavoidable environmental contamination of foods. The unbelievably sophisticated and sensitive measuring devices now in the skilled hands of our laboratory technicians can measure one twentieth part of one unit in a billion. Measurement techniques have improved 1000 fold since the Delaney Amendment was enacted eleven years ago. If the Delaney Amendment, as it is now written, were to be strictly enforced for pesticide residues it would convert us to a nation of vegetarians. Much of our red meat, many dairy products, some eggs, fowl and fish—all parts of basic food groups deemed necessary to a balanced diet—would be outlawed because of very small pesticide residues from the ecological chain.

Statement of Secretary Robert Finch, Nov. 12, 1969.

to ignore it altogether; having disregarded the clause, consistency demanded that the Mrak Commission recommend a revision to foreclose possible future embarrassment.

B. *Application of the Amendment to Pesticide Chemical Residues*

Secretary Finch offered two reasons for ignoring the Delaney amendment, one legal, the other scientific, and both untenable. First, the nation is informed that it is the legal opinion of the General Counsel of HEW that "the Delaney Amendment does not apply to pesticide chemical residues in raw agricultural commodities or in foods processed from lawful crops." If the Delaney amendment is inapplicable, it may be instructive to inquire why the Commission has recommended modification of the clause. An examination of the legislation points up the issue. The term "food additive," in pertinent part, is defined broadly as "any substance the intended use of which results or may reasonably be expected to result, directly or indirectly, in its becoming a component or otherwise affecting the characteristics of any food (including any substance intended for use in producing, manufacturing, . . . , processing, preparing, [or] treating . . . food)."¹⁸² Unquestionably, the continued use of DDT, now widely distributed in the environment, may reasonably be expected to result in its becoming a component of food products. Stuart Udall has described the chemical aptly as the "uninvited additive."¹⁸³

To be sure, pesticide chemicals, "in or on a raw agricultural commodity" or "used in the production" of a raw agricultural commodity are exempted from the statutory definition of "food additive."¹⁸⁴ Raw agricultural commodities elsewhere are defined as "any food in its raw or natural state."¹⁸⁵ Moreover, food processed from a raw agricultural commodity and containing pesticide residues is not considered adulterated if the residue "has been removed to the extent possible in good manufacturing practice and the concentration of such residue in the processed food when ready to eat is not greater than the tolerance prescribed for the raw agricultural commodity."¹⁸⁶

Consequently, the General Counsel of HEW is correct in asserting that "the Delaney Amendment does not apply to pesticide chemical residues in raw agricultural commodities or in foods processed from lawful crops." But there is more to the story. The General Counsel should point out also that a prerequisite for invocation of this legislative exception is a finding that "the residue has been removed to the extent possible in good manufacturing practice." He should acknowledge, in addition, that the Secretary is empowered

182. 21 U.S.C. § 321(5) (1964).

183. N.Y. Times, Nov. 1, 1969, at 30, col. 1.

184. 21 U.S.C. §§ 321(a)(1), (2) (1964); see 21 U.S.C. § 321(t)(3) (1964) (extending a similar exception to the definition of "color additive").

185. 21 U.S.C. § 321(r) (1964).

186. 21 U.S.C. § 342(a)(2)(c); see *United States v. Bodine Produce Co.*, 206 F. Supp. 201 (D. Ariz. 1962).

under the act to establish zero tolerances for pesticide residues "if the scientific data . . . does not justify a greater tolerance;"¹⁸⁷ and that a departmental regulation declares that a zero tolerance may be established if, among other reasons, "the chemical is carcinogenic to or has other alarming physiological effects upon one or more of the species of the test animals used."¹⁸⁸ Zero tolerances for heptachlor, aldrin, dieldrin and endrin already have been established on several crops.¹⁸⁹ Lastly, he should point out that at the time of the passage of the Delaney amendment the FDA "had already interpreted the pesticide-chemicals amendment as barring approval of a residue on food of a pesticide that causes cancer when fed [to test animals]."¹⁹⁰

Thus the decision to disregard the Delaney clause involves something beyond a mechanical judgment that the proviso does not speak to the problem of pesticides residues. Indeed, what has happened represents a surprising and profound departure from the established policy of HEW. By reversing this long standing policy and ignoring a department regulation, Secretary Finch's commission has embraced a legal absurdity that would forbid contamination of our food supply by the deliberate introduction of a carcinogenic "color additive" or "food additive" used for treatment or processing and yet invite contamination by an equally toxic pesticide used to enhance production or appearance. Pesticides in food products, moreover, unlike food additives or color additives, are unidentified on the product label, denying the consumer the opportunity to make a judgment about the risk he will confront. The decision to establish acceptable levels for carcinogenic pesticides generally distributed in food products is a decision affecting the entire population without regard to the individual's freedom of choice and, on this ground also, deserves careful scrutiny.¹⁹¹

C. *The Scientific Hypothesis*

Secretary Finch's scientific argument for ignoring the Delaney amendment is equally deficient. Nothing was said about newly discovered scientific insights disclosing safe dosage levels for carcinogenic pesticides. Rather, the public is informed that an improvement in measurement techniques, which can detect minute amounts of pesticide residues, renders the enforcement of the Delaney clause a scientific impossibility, because the establishment of zero tolerance levels "would convert us to a nation of vegetarians. Much of our

187. 21 U.S.C. § 346a(b) (1964).

188. 21 C.F.R. § 120.5(b) (1969).

189. See *Ribcoff Hearings*, pt. 3, at 760-82 (Ex. 65, Discussion of Established Tolerances for Various Pesticides).

190. *FDA Answers to Questions Submitted at Conference Co-sponsored by Administration and the FLI [Food Law Institute] at Washington on November 16-17, 1959*, 15 *FOOD DRUG COSM. L.J.* 213, 214 (1960).

191. See, e.g., *Jacobson v. Massachusetts*, 197 U.S. 11 (1905); Comment, *Fluoridation—Is It Constitutional? No*, 24 *FORDHAM L. REV.* 657 (1965); Comment, *Fluoridation—Is It Constitutional? Yes*, 24 *FORDHAM L. REV.* 674 (1965).

red meat, many dairy products, some eggs, fowl and fish . . . would be outlawed." This *ad absurdum* submission is reminiscent of industry opposition to the Delaney amendment at the time of its enactment.¹⁹² Claims that the legislation was impossibly stringent were rejected then because the scientific evidence disclosed that no harmless dose relationships for carcinogens could be established. Secretary Fleming of HEW, testifying in support of the amendment, stated, "Our advocacy of the anticancer proviso . . . is based on the simple fact that no one knows how to set a safe tolerance for substances in human foods when those substances are known to cause cancer when added to the diet of animals."¹⁹³ He also said, "*No one at this time can tell how much or how little of a carcinogen would be required to produce cancer in any human being, or how long it would take the cancer to develop.*"¹⁹⁴ This judgment, which was the impulse for the Delaney amendment, is as sound today as it was when the legislation was enacted.¹⁹⁵ Indeed, the cancer experts on the Mrak Commission agree that the "argument is indisputable that, despite our state of ignorance, or even because of it, we ought not to add to the existing burden of carcinogens, or mutagens, in our environment."¹⁹⁶ The scientific facts are insidious and sobering: carcinogens have a cumulative effect; cancers may occur a decade or more after the last known exposure to the carcinogenic stimulus; significant correlations have been established between the observation of cancer in man and the induction of tumors in animals.¹⁹⁷

It is of course no answer to the claim that safe tolerances for carcinogens are impossible to say, as has Secretary Finch, that the anti-cancer clauses should be relaxed because today we are able to detect chemical carcinogens in the food where before none were observable. Discovering that the risk is greater than originally perceived is manifestly no reason for abandoning precautions previously deemed adequate. A reading of the conclusions of the subcommittee on carcinogenicity discloses a deep concern about the threat to

192. No hearings were held on the Delaney clause in the food additives legislation. Industry views were articulated at the hearings on the color additives amendment which are replete with references to the "scientific impossibility" of enforcing this anti-cancer provision. *Hearings on Color Additives Before the House Comm. on Inter-State and Foreign Commerce*, 86th Cong., 2d Sess. 266 (1960). (Statement of Dr. Thomas Carney, Eli Lilly & Co.); *see id.* at 237 (Statement of Kenneth E. Mulford, Manufacturing Chemists Ass'n, Inc.); *id.* at 309 (Statement of Edward Brown Williams, Pharmaceutical Manufacturers Ass'n). Of special interest is the fact that Dr. William J. Darby, Co-Chairman of the Mrak Commission, testified "that adequate protection would be afforded by the law without the inclusion of the Delaney clause." *Id.* at 468.

193. *Id.* at 61.

194. H.R. REP. NO. 1761, 86th Cong., 2d Sess. 12 (1960) (emphasis in original).

195. *See, e.g.*, MRAK REPORT 262; Gordon, *Problems Involved With the Administration of the Food-Additives Amendment*, 15 FOOD DRUG COSM. L.J. 777, 785. (1960).

196. MRAK REPORT 262.

197. *Ribicoff Hearings*, pt. 3, at 676-78, 680-82. (Statement by Dr. Paul J. Kotin, Associate Director for Field Studies, National Cancer Institute, National Institute of Health.); MRAK REPORT 461-506, *passim*; *see* Bell v. Goddard, 366 F.2d 177 (7th Cir. 1966).

human health posed by our present body burdens of DDT. It recommends that DDT be eliminated in food production; and that contamination of soils and water be reduced "insofar as possible;" it concedes only that we should "not deny a major food need to our country because of the detection of trace quantities of DDT resulting from previous use of this pesticide."¹⁹⁸ What is said falls far short of recommending that the Secretary be given a general authority to establish tolerance levels for carcinogenic pesticides in food products.

Until scientists can tell us when an exposure to carcinogens will be biologically insignificant, it is submitted that Delaney-type prohibitions should be preserved. Among pesticides, one would suppose that the carcinogens would be in distinct disfavor. The National Research Council, which has recommended abandoning the zero tolerance concept as administratively and scientifically untenable, also insists that approval of a carcinogenic compound for use when it might leave a residue on food would require "most extraordinary justification."¹⁹⁹ Citing an improvement in measurement techniques is hardly such a justification. It would appear, in addition, that the chemical additive least deserving of exemption from the anti-cancer prohibitions would be the pesticides. The exposure to the carcinogenic pesticide extends to the entire consuming public. Other carcinogenic additives of demonstrable value to human health can be tightly controlled as to the amount of exposure and the recipient. The risk of cancer associated with the artificial sweetener, cyclamate, for example, may be more than offset by the advantages gained from its consumption by diabetics. An HEW Medical Advisory Group on Cyclamates has preserved this option by recommending that "products containing cyclamates continue to be made available on advice of a physician to [diabetes] patients on a non-prescription drug-labelled basis."²⁰⁰ The Group, however, "unanimously supports the Secretary's prohibitions of the inclusion of cyclamates in beverages for general use and in the future processing of general purpose foods and vegetables."²⁰¹ It is an understatement to acknowledge that carcinogenic chemical pesticides appear broadly in "general purpose foods and vegetables."

One distinct advantage derived from legislation requiring that proven carcinogens be barred from the food supply is that pressure is exerted upon industry to develop non-carcinogenic alternatives.²⁰² The Delaney amendment unquestionably has stimulated a great deal of important research in the field

198. MRAK REPORT 472.

199. Nat'l Acad. Sciences—Nat'l Research Council, Pesticide Residues Comm. "No Residue" and "Zero Tolerance," 20 FOOD DRUG & COSM. L.J. 608, 614 (1965).

200. HEW Press Release No. 3061 (Nov. 20, 1969) at 2.

201. *Id.*

202. See Kirk, *Food Additives As Viewed by the Food and Drug Administration*, 15 FOOD DRUG & COSM. L.J. 603, 607 (1960).

of cancer.²⁰³ The recent restrictions on the use of cyclamates, inspired by the amendment, already has touched off a competitive struggle to develop and market non-carcinogenic artificial sweeteners.²⁰⁴ Relaxing the Delaney amendment would encourage, in many contexts, the familiar refrain of "no acceptable alternative" which was advanced—and still is reiterated—to justify the continued use of DDT despite overwhelming scientific opposition.

It is said that distinguishing a pesticide that causes cancer from one that produces mutations, liver disorders or blood disease is indefensible.²⁰⁵ Conceivably, of course, different scientific hypotheses apply to different diseases. Whether acceptable dosage levels can be established for a toxic chemical is an empirical issue for the scientists. The Commission concedes that the unique characteristics of cancer justify its "separate consideration."²⁰⁶ In any event, consistency is a desirable virtue and can be achieved by extending the prohibitions of the Delaney amendment to pesticides found to be mutagenic, teratogenic or, indeed, to all potentially dysbiotic chemicals for which there is no known safe dosage level. Congressional leaders are considering proposals that would accomplish these objectives.²⁰⁷

D. *Cyclamates and Science*

Understandably, Secretary Finch is sensitive about the issue of the Delaney amendment. On October 18, 1969, he announced the removal of cyclamate from the list of substances recognized as safe for use in foods.²⁰⁸ He said, "I have acted under the provisions of law because it is imperative to follow a prudent course in all matters concerning public health Specifically, the so-called Delaney Amendment enacted 11 years ago states that any food additive must be removed from the market if it has been shown to cause cancer when fed to humans or animals."²⁰⁹ Having moved vigorously to ban cyclamates, once it was established as a carcinogen in animal tests, he was then confronted with even stronger evidence implicating DDT and several other pesticides. Members of the MRAK Commission, in preliminary drafts of the recommendations, conceded that DDT could be banned on the same rationale that resulted in the elimination of cyclamates.²¹⁰ Consistency seemed to demand strong steps to remove the pesticide from the food supply, for the

203. See Cannon, *Scientific Basis for Food Laws*, 18 FOOD DRUG & COSMET. L. RPTR. 712, 716 (1963); Nat'l Research Council, *supra* note 199, at 614.

204. See Wall St. J., Nov. 14, 1969, at 1, col. 5 (ban on cyclamates).

205. See Ringuette, *Medicated Animal Feeds Under Food-Additives Amendment of 1958: A Case Study*, 15 FOOD DRUG & COSM. L.J. 320, 337 (1960) (quoting former FDA Commissioner George Larrick.)

206. MRAK REPORT 478.

207. See Letter from Senator Gaylord Nelson to William H. Rodgers, Jr., Dec. 18, 1969 (on file with author).

208. Press conference, *supra* note 142.

209. *Id.* at 1-2.

210. Newsday, Oct. 25, 1969, at 10, col. 1; see MRAK REPORT 472.

obvious reason that, unlike cyclamates, DDT was a carcinogen that had been widely distributed in food products. The question was whether a sensible policy could be reconciled with the Delaney amendment.

To Secretary Finch, the only alternatives were to seize the food or disregard the amendment. There was however a middle-ground that was entirely consistent with the purpose and language of the anti-cancer clauses. Congress has informed the Secretary, in no uncertain terms, that the deliberate introduction of carcinogens into the food supply is to be discouraged. It has also instructed him to insist, as a prerequisite to excepting chemical pesticides from the anti-cancer clauses, that any residue in food products "[be] removed to the extent possible in good manufacturing practice"; and to establish zero tolerances "if the scientific data does not justify a greater tolerance."²¹¹ While the remedy clearly indicated would have been to establish zero tolerance levels for DDT in raw agricultural commodities and to seize all food containing residues of the chemical, this course was foreclosed because of the incredibly widespread contamination which resulted before responsible agencies and the general public became aware of the danger.

Under the circumstances, no one would fault the refusal to condemn a good portion of the nation's food supply. Secretary Finch, though hampered by the bifurcation of responsibility between FDA and PRD, nevertheless could have acted decisively to ban DDT. Legally, the action could have been accomplished most efficiently by PRD immediately suspending all registrations of DDT, a course suggested if not compelled by FIFRA.²¹² The same result could have been achieved by FDA publishing a proposed regulation establishing zero tolerances and inviting the submission of scientific data on whether greater tolerances are justified or exemptions in order.²¹³ A more practical alternative was for Secretary Finch to initiate discussions with the manufacturers of DDT for the purpose of securing their acquiescence in cancellations affecting agricultural uses. With respect to cyclamates, the Secretary was fully aware that the power to seize adulterated food a fortiori assumed a power to cooperate with the manufacturers in securing "orderly withdrawal" of the products from the marketplace so that they could be "phased out" by February 1, 1970.²¹⁴

211. 21 U.S.C. § 321(5) (1964).

212. Under the act all products containing DDT are "misbranded" because injury to non-target species is caused by use in accordance with commonly accepted practice. See text accompanying notes 121-24 *supra*. In addition, the Secretary may "suspend the registration of an economic poison immediately" when he finds "that such action is necessary to prevent an imminent hazard to the public." 7 U.S.C. § 135b(c) (1964). Administrative grounds for finding an "imminent hazard" are established if an economic poison is a proven carcinogen or is demonstrably injurious to "fish, wildlife and useful animals." 7 C.F.R. § 364.4(c) (1969).

213. "In practice, 'zero tolerance' is interpreted by FDA in some cases to include a detectable level of residue, lower than that believed to be pharmacologically insignificant." USE OF PESTICIDES 16.

214. Statement by HEW Secretary Robert Finch, October 18, 1969, at 2.

That the "orderly withdrawal" of DDT from the food supply would take some 30 or 40 years rather than a few months is no reason for further foot-dragging. Generously construed, the Mrak Commission report and Secretary Finch's public utterances can be read, in legal terms, as concluding that the "scientific data" justifies rejection of the zero tolerance notion as impractical and that the further question of whether "good manufacturing practice" requires the use of DDT is now being explored by PRD in its rule-making proceeding to determine "essential" uses. With due regard to the politics of the issue and the awkward allocation of legislative responsibility, however, it is indisputable that the action taken falls considerably short of forbidding the future deliberate introduction of a carcinogenic chemical pesticide into the nation's food supply. PRD's notices of cancellation have had no immediate impact whatsoever on agricultural uses.²¹⁵ Long delays may be expected.

The cyclamate-DDT experience is a study in contrasts. Within less than a month, the Delaney amendment was transformed from the bell weather of the administration's advance in the field of consumer protection to an archaic stumbling block to scientific progress. Perhaps the combined influence of the agri-chemical industry was more influential than the manufacturers of products containing cyclamates. Perhaps also the dimensions of the DDT issue explain if not justify the complete abandonment of the legal restraints associated with the anti-cancer clauses; surely tracking through the legal arguments exposes the need for concurrent responsibilities over registration. In any event, some consistency, at least, has been restored in the administration of the law. On November 20, 1969, acting on the advice of an HEW Medical Advisory Group on Cyclamates, Secretary Finch softened his statement of October 18, emphasizing that products containing cyclamates "should continue to be made available on advice of a physician to [diabetes] patients on a non-prescription drug-labelled basis."²¹⁶ And on December 21, FDA Commissioner Herbert Ley was fired, reportedly for his inept handling of the cyclamate issue.²¹⁷

E. *The Amendment in Perspective*

It is one thing to acknowledge that the Delaney amendment has become unenforcible by *fait accompli*. It is quite another to suggest, as does the Mrak Commission, that the legislation be revised to reflect the realities of the situation. It is difficult to explain the proposed revision of the Delaney amendment to be anything other than a knee-jerk concession to our present pervasive and intolerable levels of contamination. In the future, the routine and widespread use of a carcinogenic pesticide would appear to be an unlikely and undesirable eventuality. Surely any serious proposals for modifying the Delaney amend-

215. See 34 Fed. Reg. 18827 (Nov. 20, 1969).

216. HEW Press Release No. 3061, (Nov. 20, 1969), at 2.

217. N.Y. Times, Dec. 9, 1969, at 1, col. 4.

ment must be documented by demonstrating a need for the future use of carcinogenic chemical pesticides and establishing that, at certain levels, traces of this pesticide are biologically insignificant. The argument that "we cannot condemn all the food" falls far short of establishing the case for modifying the legislation.

No citizen concerned about DDT should underestimate the value of the Delaney amendment in this lengthy controversy. In many respects the forces aligned against DDT and related chemical pesticides were caught in a cruel dilemma. Overwhelming scientific evidence accumulated over several years implicated DDT as a worldwide pollutant, having toxic effects on many species of non-target organisms. But proving that DDT was an environmental contaminant failed to inspire corrective action. No stringent legislation—certainly nothing approaching the Delaney amendment—had been enacted to protect the fish and the birds.

Small wonder, then, that the leverage afforded by the Delaney amendment, on the ground of public safety, was fully exploited by frustrated environmentalists. Legal actions were filed challenging the further use of DDT on the ground that it was a proven carcinogen in animal tests.²¹⁸ The media stressed the similarity of the cyclamate and DDT issues.²¹⁹ The Delaney amendment was clear and specific, comprehensible to the public at large and, it is submitted, highly influential in the deliberations of the commission.²²⁰ It afforded the extreme advantage of a per se analysis: if the cancer studies are scientifically sound, the legal consequence is flatly ordained.

The particulars of the anti-cancer clause therefore may afford a welcome avenue for exerting pressure, legal and otherwise, on the policy choices of a public agency. The necessity to control the exercise of administrative discretion is an issue receiving much attention of late.²²¹ The consequences for environmental law are considerable. That the agencies have not been doing the job is all too obvious. The highway builders, urban planners and dredgers working for the government too often have destroyed our natural resources with dispatch, vigor and incredible shortsightedness.²²² The new breed of bureaucrats

218. *Rodgers v. Finch*, Civ. No. 25,385, filed by the author in the Ninth Circuit Court of Appeals on Jan. 30, 1970; *Environmental Defense Fund, Inc. v. Finch*, Civ. No. 23,812, filed in the Court of Appeals for the District of Columbia on Dec. 30, 1969. Both petitions seek review of similar orders, signed by FDA Commissioner Ley on Dec. 8, dismissing pesticide petitions requesting that zero tolerances be established for residues of DDT on raw agricultural commodities. The *Rodgers* petition has been stayed, by order dated April 1, 1970, until judgment in the *Environmental Defense Fund* action "has become final." See *N.Y. Times*, Nov. 1, 1969, at 30, col. 1, describing a petition filed with USDA by the *Environmental Defense Fund* and others requesting the immediate cancellation of the registration of all pesticide products containing DDT.

219. E.g., Green, *The Politics of Pesticides*, *THE NATION*, Nov. 24, 1969, at 569; *TIME*, Nov. 21, 1969, at 59.

220. See note 210 *supra*.

221. See, e.g., K. DAVIS, *DISCRETIONARY JUSTICE* (1969); Peck, *A Critique of the NLRB's Performance in Policy Formation: Adjudication and Rule Making*, 117 U. PA. L. REV. 254 (1968).

222. See Baldwin, *The Santa Barbara Oil Spill*, note 25 *supra*; Green, *The Role of*

in the fields of air, water and solid waste pollution already have demonstrated their ability to postpone decisions that cannot and should not be postponed;²²³ the tendency for the pleasant arrangement between the regulator and the regulated is often at the expense of the public. Deservedly, agencies are appearing increasingly as named defendants in legal actions initiated by citizens concerned about protecting the environment.²²⁴

The failures of the administrative agency are among the most important of public law questions today. Institutionalizing the administrative critic is a notion that is becoming widely accepted and deserving of further refinement. The recommendations of the Mrak Commission are but one form of extra-governmental contributions that are urgently needed. Across the country scientists are organizing to put a halt to the degradation of the environment caused by industry irresponsibility and governmental foot-dragging.²²⁵ Directing this wealth of talent through legal channels is the responsibility of the lawyer. The strength of the Delaney amendment, not apparent to most observers, is that it sharply confined administrative discretion in an area where officials for years had been dead wrong and legally vulnerable. No single piece of legislation was more responsible for the success of the assault against the persistent pesticides. Acquiescing in its modification would amount to a mistaken concession to an intolerant industry and an embarrassed government.

IV. ENCOURAGE VARIOUS INITIATIVES TO PREVENT FURTHER ENVIRONMENTAL CONTAMINATION BY PESTICIDE RESIDUES

Recommendation X. Increase federal support of research in all methods of pest control, the effects of pesticides on human health and on the ecosystems, and on improved techniques for prediction of human effects.

Recommendation XI. Provide incentives to industry to encourage the development of more specific pest control chemicals.

Like many of the other recommendations, this clarion call for additional research sounds a refrain that is distressingly familiar in the pesticides field. Ten years ago another commission headed by Dr. Mrak recommended that "[r]esearch should be intensified in all areas pertaining to the use, toxicology and effects on health of agricultural chemicals and in finding better pest

Government in Environmental Conflict, Conference on Law and the Environment (unpublished paper on file at the Conservation Foundation, Sept. 1969, Wash., D.C.); Wall St. J., Jan. 6, 1970, at 1, col. 6.

²²³ See Green, *supra* note 222.

²²⁴ See note 218 *supra* for a few instances among many.

²²⁵ See B. COMMONER, SCIENCE AND SURVIVAL 110-20 (1966), for a discussion of the St. Louis Committee for Nuclear Information, which since 1958 has pioneered in public education about the scientific aspects of public affairs. The Environmental Defense Fund, Inc. which has spearheaded the assault against the persistent pesticides, gains support for its actions through its Scientists Advisory Committee, which includes more than 200 scientists who serve without fee. See Press Release, The Environmental Defense Fund and DDT, Oct. 31, 1969; *Environmental Pollution—Scientists Go to Court*, 158 SCIENCE 1552 (1967).

control measures. The research should include not only development of safer pesticides and more efficient methods of analysis, but also alternative measures such as biological control and the development of pest-resistant varieties of crops."²²⁶ Expanded research needs were identified by the President's Science Advisory Committee in 1963,²²⁷ and again in 1965,²²⁸ and have been stressed in every major study since then.²²⁹ Recommending the development of non-persistent alternatives has been a consistent theme.²³⁰ The Mrak Report now adds a plea for incentives to the past calls for cooperation. The Commission's thorough review of the scientific literature highlighting the gaps in our knowledge demonstrates that additional research needs are urgent and irrefutable.²³¹ Time and again the Commission stresses our fundamental areas of ignorance about the effects of pesticides on man and his environment.²³² Without a doubt, the risks of this new technology are still largely obscure.²³³

Choices are inevitably necessary in allocating funds between private industry and governmental agencies and in identifying priorities. The development of selective non-persistent chemicals is obviously crucial. The President's Science Advisory Committee has concluded that this research ability is well within the capacity of the pesticides industry. Similarly, industry is on record as being opposed to expanded governmental research to discover safer pesticides since it not only "puts the government in direct competition with industry, which will tend to reduce the amount of industrial research . . . but implies that industry is not bending every effort to find safer and more effective chemicals toward these ends."²³⁴

Whether or not industry is "bending every effort" its unwillingness or inability to develop safer, less persistent chemicals is indisputable. The Commission properly points out that "developmental costs will be disproportionately high in relation to profits from the lower volume of sales of more specific

226. GOVERNOR EDMUND G. BROWN'S SPECIAL COMMITTEE ON PUBLIC POLICY REGARDING AGRICULTURAL CHEMICALS, REPORT 9-10 (1960).

227. USE OF PESTICIDES 21.

228. U.S. PRESIDENT'S SCIENCE ADVISORY COMM., ENVIRONMENTAL POLLUTION PANEL, RESTORING THE QUALITY OF OUR ENVIRONMENT 268 (1965).

229. *E.g.*, Ribicoff Report 68; NATIONAL ACADEMY OF SCIENCE—NATIONAL RESEARCH COUNCIL, INSECT-PEST MANAGEMENT AND CONTROL 499-500 (1969); JENSEN REPORT 29-30.

230. *See, e.g.*, note 226 *supra*; USE OF PESTICIDES 20 ("Elimination of the use of persistent toxic pesticides should be the goal").

231. *See* MRAK REPORT, *passim*.

232. The Commission identified an "urgent need" to investigate the implications that DDT interferes with photosynthesis in phytoplankton (p. 207). The Mrak Report points out "important gaps in our knowledge of the storage, metabolism and significance of DDT in human tissues" (p. 255); and that the "threshold dose" of DDT for induction of metabolizing enzymes in human liver is "unknown" (p. 235).

233. Although genetic damage is "irreversible by any process we now know," the Commission concludes that none of the pesticides have been tested properly for possible mutagenic effects (pp. 571-72).

234. Gordon, *Problems Involved With the Administration of the Food Additives Amendment*, 15 FOOD DRUG & COSM. L.J. 777, 783 (1960) (the author is the director of Research, Agricultural Chemicals Division, Monsanto Chemical Company).

chemicals which will be used selectively.”²³⁵ Additional funding of governmental research may be necessary. Another method for channeling research towards the development of acceptable alternatives is through legal coercion against the use of certain chemicals; the approach of the Delaney amendment is indispensable. Industry incentives and direct subsidies also are an integral part of a sensible policy aimed at controlling chemical pesticides. That cleaning up pollution will cost money is not at issue.

A necessary corollary of both public and private research is to require publication of the findings. Free dissemination of knowledge is the first principle of scientific research. Today, political realities trench hard upon the full realization of this principle. Reasons of national security interfere with the publication of research of crucial importance to decisions affecting the environment. “Secrecy has deprived us, for example, of the knowledge that might have warned us in time that nuclear explosions are biologically risky, and, when carried out at high altitudes, can obscure for a long time what we want to learn about the newly discovered bands of atomic particles which surround the earth.”²³⁶ Industrial competition similarly works to inhibit the free dissemination of research about environmental hazards of chemical pesticides. A recent survey of the toxicological effects of weed killers commenced with this disclaimer: “Many of the toxicological data underlying assessment of the risks involved by using [weed killers] in practice originate from confidential, non-published reports placed at the disposal of the authorities concerned. Such data have not been included in the present survey.”²³⁷ Complaints have been made about the difficulty in securing experimental results, crucial to the determination, of the propriety of registering a particular chemical, from both the industry, PRD and FDA as well.²³⁸ The Mrak Commission noted, “Unpublished reports in the files of industry and of Federal regulatory agencies are less accessible than the general scientific literature.”²³⁹ In the cyclamates controversy, at least one of the scientists engaged in the research felt constrained to go directly to the media with his data because of apparent concern about foot-dragging within the agency.²⁴⁰ Legislation, which has been deservedly criticized,²⁴¹ specifically forbids disclosure of the data submitted in support of a tolerance application until the publication of a regulation, thus foreclosing contributions by disinterested outsiders.

In some respects, government-sponsored research led to the development of DDT as part of our war policy and, indirectly, to the great expansion of

235. MRAK REPORT 17.

236. B. COMMONER, *SCIENCE AND SURVIVAL* 55 (1966).

237. Dalgaard-Mikkelsen & Poulson, *Toxicology of Herbicides*, 14 PHARMACOLOGICAL REV. 225 (1962).

238. *Ribicoff Hearings* 694-95, 703 (Testimony of Dr. Wilhelm C. Hueper, National Cancer Institute, National Institute of Health).

239. MRAK REPORT 462.

240. Press conference, *supra* note 142, at 20, 25, 29-31.

241. See *USE OF PESTICIDES* 17.

the chemical pesticides industry. Perhaps this government support "provided a twenty-year headstart for this one pesticide, and acted as a quasi-official restraint on trade and technological innovation by inhibiting . . . investment in chemicals that would be more specific in their action and less subject to cycling and magnification in nature."²⁴² Long overdue is action by the government to reorder priorities on research in the pesticides field and to insist upon disclosure of information that will redound to the benefit of the public.

Recommendation XIV. Increase participation in international cooperative efforts to promote safe and effective usage of pesticides.

Tackling a worldwide pollution problem on an international basis is a commendable objective. No figures are available on the world production or use of the persistent pesticides.²⁴³ It is clear, however, that American industry is the prime producer of the world's supply of chemical pesticides.²⁴⁴ It is equally clear that the recent restrictions on domestic usage will not result in limitations on exports. The amount of DDT used abroad is increasing rapidly and projections confirm the trend.²⁴⁵

The Commission's view that the United States government should assume leadership deserves emphasis. Credit for many of the gains realized through the widespread use of pesticides as well as responsibility for the damage inflicted rests squarely upon the technological elite of American industry and governmental officials charged with regulating it. Even today, sales of DDT and related chemicals are being promoted abroad by United States industry and agencies, such as AID and the Department of Defense.²⁴⁶ There is no question that, in this regard, the world will buy what America sells.

Optimistically, a renewed research commitment inspired by the Mrak Commission will result in the transmission of information throughout the world to halt and reverse the process of environmental degradation attributable to widespread use of the persistent pesticides. The Environmental Quality Council of the Office of the President already has taken the commendable step of pursuing the use of multilateral channels, including the UN, specialized agencies and regional organizations to facilitate the exchange of information and technical assistance.²⁴⁷ The early period of chemical conquest is drawing to a close. Worldwide environmental degradation must be contained and the process of reclamation initiated. To secure these goals, international cooperation obviously is essential.

Recommendation XII. Review and consider the adequacy of

242. Clement, *The Pesticide Problem*, 8 NAT. RES. J. 11, 21-22 (1968).

243. JENSEN COMMITTEE REPORT 7.

244. See MRAK REPORT 47.

245. See *id.* at 55-56.

246. See *id.* at 49-51.

247. Press Release, Office of the White House Press Secretary, Environmental Quality Council, Nov. 20, 1969, at 2.

legislation and regulation designed to [improve advertising, labeling, packaging, disposal, indemnification and other miscellaneous reforms].

It is impossible to respond, within limited space, to this series of recommendations that deal in shotgun fashion with the glaring inadequacies in present regulations governing the sale, use and disposal of chemical pesticides. Perhaps articulating the issues is a *sine qua non* to enforcing reform. No one would quarrel with the Commission's observation that "[a]dvertising inconsistent with the label should be prohibited."²⁴⁸ Fraud should be discouraged. On the other hand, absent reference to specific deficiencies in enforcement policies and legislative weaknesses, precatory exhortations against wrongdoing are unlikely to result in meaningful initiatives.

The Commission's treatment of labeling is illustrative. Plainly, once a pesticide is registered, regulatory efforts are greatly dependent upon the efficacy of the label and the instructions. Given the deficiencies in the registration process, labeling as an instrument of control becomes crucial to the effective regulation of pesticides. What is required is an accurate label, an ability to comprehend the label by the user and an inclination to obey what was understood. Predictably, the labeling line of defense against pesticide misuse is erratic at best.

A reading of many pesticides labels would afford excellent clinical experience for a course in consumer fraud. "This material is sold without warranty as to hazards or results" reads the modest disclaimer on the label of Ortho Rose Dust, manufactured by California Spray-Chemical Corporation. A pesticide is misbranded if when used as directed or in accordance with commonly recognized practice it is injurious to man or other vertebrates.²⁴⁹ Suffice it to say, that among other legalities, the continued use of several of the chlorinated hydrocarbon pesticides plainly offends the labeling provisions of FIFRA. The House Committee on Government Operations supplies another classic instance of faulty labeling:²⁵⁰ the label for a concentrated fly and roach spray had been approved for registration by PRD although it bore obviously contradictory warnings. The warning notice alerts the user to:

Use in well ventilated rooms or areas only. Always spray away from you. Do not stay in room that has been heavily treated. Avoid inhalation.

The directions for use tell a different story:

Close all doors, windows and transoms. Spray with a fine mist sprayer upwards in all directions so the room is filled with the vapor. If the

248. MRAK REPORT 17.

249. 7 U.S.C. § 135(z) (2) (g) (1964).

250. DEFICIENCIES REPORT 45.

insects have not dropped to the floor in 3 minutes repeat spraying, as quantity sprayed was insufficient. After 10 minutes doors and windows may be opened.

The Commission renders valuable though obvious advice by pointing out that effective labeling practices and instructions "require use of common (generic) names for all pesticides, and the conveying of clear directions for and information about proper use, dangers, and first-aid. Printing should be readable and multilingual when that is appropriate."²⁵¹ But an across-the-board recommendation to correct all glaring deficiencies begs many policy questions.²⁵²

Empirically, the primary issue is whether the label and instructions are likely to influence the conduct of the user. A suspicion would be that few users, especially among the homeowners, are likely to read the label. Those who do will disregard it. Why not double or triple the recommended dosage or frequency of application in order to assure the annihilation of the intended target? Reportedly, one grower who had spread heptachlor epoxide on his turkey range to control chiggers despite label warnings that it could harm livestock responded, "Hell, I ain't raising livestock. I'm raising turkeys."²⁵³

After operating on implicit assumptions about the reliability of labels for a number of years, PRD recently has invested \$52,000 with the University of Illinois to determine the accuracy of the universal hunch that nobody reads the label.²⁵⁴ According to a recent report of the project investigators, a review of the literature confirmed "that most of the pesticide users do not read pesticide labels" and, moreover, "users find it difficult to understand pesticide labels when they read them."²⁵⁵ Not surprisingly, labeling reform will provide no protection against environmental and personal mishaps caused by chemicals that never should have been made available in the first place. Improved instructions are an illustory gesture. It is hoped that the recent actions withdrawing DDT from general use will be duplicated with respect to many other pesticides consistent with the recommendations of the Mrak Commission.

The notion of controlled use has been dogma in the pesticides field for time immemorial. The Ribicoff Committee was told by USDA that pesticide users have been receiving 3 million reminders a year to "[r]ead the label and

251. MRAC REPORT 18. The Ribicoff Committee uncovered evidence that Mexican-American farm workers suffered inordinately from acute poisoning episodes because of an inability to comprehend labels written in English. See *Ribicoff Hearings* 623. (Ex. 50, Occupational Disease in California Attributed to Pesticides and Other Agricultural Chemicals).

252. Writing a label for DDT is a challenge not easily met: POISON. This pesticide is highly toxic to non-target species, notably marine organisms and many species of bird life. Interferes with photosynthesis in marine plankton. Causes cancer in test animals. Is persistent and mobile and is distributed throughout the world's water and air supply. May be ingested by man through the air he breathes, through his skin and his food supply. Tends to concentrate in fatty tissues but at levels that may be biologically insignificant.

253. Wall St. J., Nov. 28, 1969, at 4, col. 2.

254. DEFICIENCIES REPORT 45.

255. *Id.*

follow the instructions,"²⁵⁶ a precaution of doubtful value since nobody reads the label or follows the instructions. For years nutritionists, entomologists and agriculturalists have been insisting that careful, informed use rather than a complete ban was the solution to the problem of persisting residues in the environment. Dr. William J. Darby, co-chairman of the Mrak Commission, testified in 1966 that the President's Science Advisory Committee's recommendation to eliminate the use of the persistent pesticides was mistaken. In his view the devotion of greater resources "toward education of those who are responsible and those who are using pesticides will accomplish much more in reducing the hazards than will legislative restrictions."²⁵⁷ On October 23, 1969, Secretary of Agriculture Hardin issued a statement urging "all users of pesticides . . . to heed label directions and exercise constant care in . . . application, storage and disposal."²⁵⁸ Notions of controlled use are manifested in regulations forbidding spraying in dust form,²⁵⁹ which poses unique drift problems and in requirements that applicators be licensed. The Mrak Commission's recommendations to allow certain uses only upon permit reflect a similar line of thinking.²⁶⁰ The cancellation of registrations for certain DDT uses but not others—currently underway in several states and at the federal level—shows a similar inclination to place reliance upon use restrictions.

This is not to say that efforts to educate the public, control pesticide usage, license applicators and advise against improper applications are mistaken. Regulation must run the gamut. The DDT dispute no doubt has its parallels in public discussions about controlling hand guns, bulldozers, atomic bombs, or any other type of dangerous instrumentality. Regulation may range from education to licensing users to restricting use in confined areas by certain persons or to an outright ban. Those being regulated customarily opt for the lesser form of restriction.

As to the persistent pesticides, however, notions of controlled usage have been thoroughly discredited. The chemical's mobility, stability and solubility assure an escape beyond the area of application and its accumulation in biological organisms. Trace amounts in the environment build to dangerous levels through the process of biological concentration. While ignorance, recklessness and greed have contributed to the environmental catastrophe we now confront, the consequences were predictable when these compounds were first introduced into general use.

Recommendation XIII. Develop, in consultation with the Council of State Governments, model regulations for the collection and disposal of unused pesticides, used containers, and other pesticide contaminated materials.

256. Ribicoff Hearings 723.

257. *Id.* at 659.

258. Secretary's Memo No. 1666, USDA Policy on Pesticides, Oct. 23, 1969, at 2.

259. *E.g.*, 3 CAL. ADMIN. CODE § 2408(b) (regulations); see MRAK REPORT 115.

260. MRAK REPORT 13.

This recommendation is a necessary concession to the present precarious state of affairs. Disposing of "unused pesticides" requires careful regulation for the simple reason that there now exists, widely distributed among the population, a deadly supply of chemicals which should never be released into the environment. The great danger, of course, is that the alarmed housewife will deposit her entire supply of chemicals into the drainage system where it can do the most harm. Commendably, states which have acted to restrict the use of the persistent pesticides have accompanied these announced cutbacks with instructions on disposal.²⁶¹ Officials have collected existing suppliers and have publicized the availability of their services.²⁶² Generally, the homeowner is advised to bury his DDT products at places far removed from water sources.²⁶³ This represents an advance in thinking over the advice currently dispensed by the USDA which instructs the user to "wrap empty containers or those unwanted pesticides in heavy layers of newspapers and promptly put them in the trash can."²⁶⁴

The leisurely development of model regulations is insufficient to meet the present emergency. Informing the public about methods of proper disposal is essential and urgent. Before the model regulations are developed, HEW and USDA, in cooperation with state officials, should take steps forthwith to inform the public about methods of disposal that would be least damaging to the environment.

Perhaps the American technology that created the disaster will come to the rescue. Existing knowledge "confirms the feasibility of inducing active withdrawal of pesticide residues from the human body" although further research is needed.²⁶⁵ HEW reports significant progress under a research contract to develop a process that would break down more rapidly several of the persistent pesticides.²⁶⁶ The residues may be eliminated but the problems of coping with modern technology remain.

CONCLUSION

That we have entered a new world of technology is evident everywhere about us. Modern man is living in a "new kind of environment" which has been largely created in the "incredibly short" time of twenty years. In this brief period, "at least half a million new chemical compounds have come into

261. See Cooperative Extension Service, Mich. State University, *How to Dispose of DDT*, Extension Bull. E-664 (Aug. 1969); Press Release, Agricultural Extension Service, Washington State University, Dec. 26, 1969.

262. See *Seattle Post-Intelligencer*, Dec. 20, 1969, at 13, col. 1.

263. See note 261 *supra*.

264. U.S. DEPT OF AGRIC., OFFICE OF INFORMATION, *FACTS ABOUT PEST CONTROL: YOUR HOME & SAFE USE OF PESTICIDES* (Dec. 1967).

265. MRAK REPORT 36.

266. See 2 CCH CLEAN AIR & WATER NEWS 15 (1970).

existence."²⁶⁷ The issue of the persistent pesticides is not whether the chemical revolution in the control of pests has proven useful. Technology in agriculture, as elsewhere, is the key to our way of life. But our miracle innovations must be made to serve the ends of civilization rather than subvert them. The story of DDT is a story of uncontrolled experimentation with the world's population and environment. The vehicle for protecting us from ourselves—the law—was tried and found wanting. The Mrak Commission has told us that much and a great deal more. Whether that vehicle will be repaired for the voyage ahead is currently being debated. Certainly no goal surpasses in importance the need to prevent man from harming, abusing or destroying himself and his environment. No one is immune from the challenge nor secure from the consequences of failure.

267. *Ribicoff Hearings* 832 (quoting Luther L. Terry, former Surgeon General of the United States).